1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

agriculturalist responds to rainfall not as a statistical mean but as rain falling from day to day and month to month. It is beyond the scope of this study to analyze the day to day march of precipitation--indeed, the poor data available merit no more than a superficial analysis. By a study of deviations from the annual and seasonal averages, it is possible to draw general conclusions and to qualify the patterns on the climatic maps. The analysis below deals with the two meteorological stations of the Recôncavo with reasonably reliable data--Salvador and Cruz das Almas--and is for the years 1947 through 1952. This span includes both relatively wet and relatively dry years. The accompanying table (Table I) presents the complete summary of mean figures and deviations.

Though the movement of annual and seasonal totals for these two sections was similar, the deviations from the averages were significantly different, as the accompanying table (Table I) reveals. For the major wet season, Salvador had a mean deviation of 10 per cent, Cruz das Almas of 16 per cent. The greater mean deviation in the interior corresponds to the usual generalization of drier areas having a less reliable (more deviate) rainfall pattern. Thus the farmer of Cruz das Almas, cultivating tobacco and manioc with a minimum of seasonal rainfall, must cope with more serious deviations from the "expected" average than the sugar cane planter in his zone of relatively plentiful rainfall.

Of the 36 wet season months (March-August for 6 years), 14 months had less than 100 mm. at Cruz das Almas; and 100 mm. falling in "well-distributed" showers, is the minimum monthly growing season precipitation necessary for tobacco, the chief commercial crop.[25]

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1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

433 241 178 Recôncavo remains today a backward and traditional agricultural society.

However, not all elements in Recôncavo life are static. In the field one was incessantly conscious both of the gradual course of change in this region and of the latent instability of its economic organization. Particularly in the last 75 years the agricultural economy of the Recôncavo has begun to shift--it is apparently in the throes of a drastic economic reorganization. It remains to be seen whether the traditional values will survive this economic revolution. [128] The brief historical discussion to follow is not intended as a substitute for a full-scale historical reconstruction. Its purpose is to indicate the major patterns in the evolution of the Recôncavo.

175 The Evolution of Colonial Agricultural Institutions. By the end of the initial half century of settlement (1600) those ethnic groups, crops, animals, and agricultural institutions which were to [567] become characteristic of the Recôncavo were already in evidence. Negro [249] slaves were brought in on the heels of the first Portuguese settlers,[3] [231] and sugar cane and cattle were also introduced at this time.[4] Tobacco [244] and manioc, produced by the Indians indigenous to the northeast of [249] Brazil, were rapidly integrated into the colonial agriculture of the [177] Recôncavo.[5] The combined sugar mill and plantation (engenho), which [249] was the basic economic institution of the Recôncavo until the end of [471] the nineteenth century, already existed in rudimentary form before 1600.[6]

175 249 [244] From the beginning the new colony in the Recôncavo had three important crops--sugar cane, tobacco, and manioc. It was the cultivation of sugar which the Portuguese crown and the initial settlers had

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

compose most of the population of the Recôncavo today. In 1940 the population of the Centro-Litoral of Bahia--the census area most closely corresponding to the Recôncavo--had the following composition: white, 22 per cent; black, 29 per cent; and others, predominately mulatto, 49 per cent.[12]

The purchase of large quantities of slaves required the production of a commodity which could be used as exchange in Africa. The indigenous tobacco proved eminently suitable for this purpose. Although rum apparently was used also in this trade, tobacco became the essential source of exchange for the slave traffic.[13] Bahia was the main area of tobacco production, and probably most of this production was localized in the Recôncavo.[14]

The initial period of settlement saw also the incorporation of manioc[15] into the agricultural economy as a staple. Like tobacco, it was an indigenous crop. Thus one indigenous crop was adopted to purchase slaves in Africa and another to feed them in Brazil. By 1587 manioc apparently was being cultivated on a moderate scale in Bahia.[16] A recurring theme in the history of the Recôncavo is the shortage of this essential foodstuff.

In addition to the principal crops--sugar, tobacco, and manioc--a number of lesser agricultural products were important in the early history of the Recôncavo. Corn, beans, and bananas were grown on a small scale and used to supplement the manioc diet. Other diversifications of the diet were provided by meat and fish. Cattle were maintained to draw the ox carts and to power many of the cane mills. For lighter tasks asses and mules were used.

Out of this complex of Portuguese settlers and Negro slaves, of old world and new world crops, there developed certain characteristic agricultural enterprises. The engenho--old world in the origin of its

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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Supplementary Crops
(Subsistence and Commercial):

Pineapple (Abacaxi)	168	hectares
Rice (Arroz)	61	"
Tomatoes (Tomate)	46	"
White Potatoes (Batata inglêsa)	44	"
Cotton (Algodão)	40	"
Onions (Cebola)	14	"
Garlic (Alho)	5	"
Green or Snap Beans (Fava)	4	"

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311 On the basis of the above figures, the total cultivated land in the Recôncavo in 1948 was about 80,000 hectares. In addition to the above,
245 there are a number of tree crops, not cultivated in the true sense, which are important in the agricultural complex. More often than not these "crops" are of spontaneous origin.

[192]

African Oil Palm (Dendê)
Mango (Manga)
Jack Fruit (Jaca)
Cashew (Cajú)
Bread Fruit (Fruta de pão)

231 The following animals are important in the livestock economy of the Recôncavo:

[192]

Cattle (Bovinos)
  Cows (Vacas)
  Oxen (Bois de trabalho)
Sheep (Ovinos)
Goats (Caprinos)
Swine (Suinos)
Donkeys (Asininos or Burros)
Mules (Muares)
Horses (Equinos or Cavalos)

These animals will be discussed in the chapter on animal industry (Chapter VII).

244 Manioc. Manioc was one of the most important cultivated plants which the Portuguese colonists borrowed from the Indians of Brazil.
[175] Flour made from the manioc root, farinha de mandioca, was the basic
[262] subsistence food of the colonial sugar economy and remains today the
[178] principal element of the diet of much of the Brazilian lower class.
[565] Manioc production is most notable along the coast of Brazil, from the

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11
Brazil SL1
Northeast Brazil SO1

B 244 433 Manioc production is most notable along the coast of Brazil, from the mouth of the Amazon to Rio Grande do Sul, but it has considerable importance in the interior of the eastern half of the country.[4] The tonnage of manioc production in Brazil is exceeded only by that of sugar cane--thus manioc is produced in greater quantity than corn, beans, or rice, the other basic subsistence crops. However, the total value of manioc production is less than that of coffee, cotton, corn, or rice. In the Recôncavo the cultivated area of manioc, over BB 244 311 433 262 22,000 hectares, exceeds that of any other crop, and the value of its production is second only to tobacco. It is usually grown as a subsistence crop for local consumption, but there are a few areas of surplus production.

NB BB 244 252 262 Mandioca--manioc, cassava, or yuca--is a stem-propagated perennial which is tolerant of a variety of edaphic, climatic, and cultural conditions. The rootstock of the bitter variety--Manihot utilissima, or M. esculenta--which is most common in Bahia, contains a poisonous substance--manihotoxine--which must be removed before it can be used as human food. In the Northeast the roots almost universally are converted in crude mills into farinha de mandioca, a coarse flour which is eaten in either a raw or cooked state.[5] Sweet manioc (manihot api, in Brazil called aipim) is cultivated on a small scale. The rootstock of this variety may be eaten without extensive processing and is prepared, like the white potato, by boiling.

BB 244 252 433 The cultivation of manioc is a widespread feature of the cultural landscape of east-central Bahia, overshadowed only by the low and scrubby second growth, capoeira, which follows the intensive cultivation of this plant under a system of land rotation. Manioc cultivation and the processing of its roots are the most characteristic pursuits of the rural people--and often the most primitive.

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Manioc is generally cultivated by hand by small cultivators on land near the huts in which they live--[land] called the mandiocal, very common in the interior of the state. The immediate preoccupation of the sertanejo [countryman of the interior] after the construction of his house is the planting of manioc to secure cheap food---either sweet manioc or bitter manioc, which is transformed into flour. All the family are employed in this work. The industry of flour production is rudimentary and it uses simple processes.

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The cultivation of manioc in Bahia is to provide flour for the local market, since the state does not export this product. The development of this culture is, therefore, closely related to the distribution of population, the most productive zones which are noted on the map corresponding to regions where the population is most dense. It is perfectly reasonable that the most productive region corresponds to the Recôncavo, where there is concentrated the mass of the population of Bahia and a large number of towns and cities, the most important and populous in the state.... ... it is the region of the most highly developed agriculture in the state; it united a relatively dense rural population with manioc, almost always cultivated on a large scale in the zones of the cultivation of tobacco.[6]

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As is indicated in the foregoing quotation, the distributional pattern of manioc reveals a very close association with the cultivation of tobacco and with certain urban centers. But as might be expected in view of the broad environmental tolerance of manioc, its distribution within the Recôncavo is not directly determined by any particular physical factor. Manioc is grown in all parts of the Recôncavo, excepting only the compact pockets of sugar cane cultivation. Only one município, São Sebastião, grew less than 100 hectares or produced less than 1,000 tons of tubers in 1948. In eight municípios the area of manioc cultivation exceeded 1,000 hectares, and the production was more than 10,000 tons in each. About 28 per cent of the cropland of the Recôncavo was in mandioca.[7]

The major concentration of manioc cultivation (Maps 22 and 23) and production (Maps 24 and 25) is along the eastern edge of the Crystalline Uplands in the Southwestern Recôncavo, where in 1948 three municípios[8] grew 54 per cent of the Recôncavo's 22,472 hectares of

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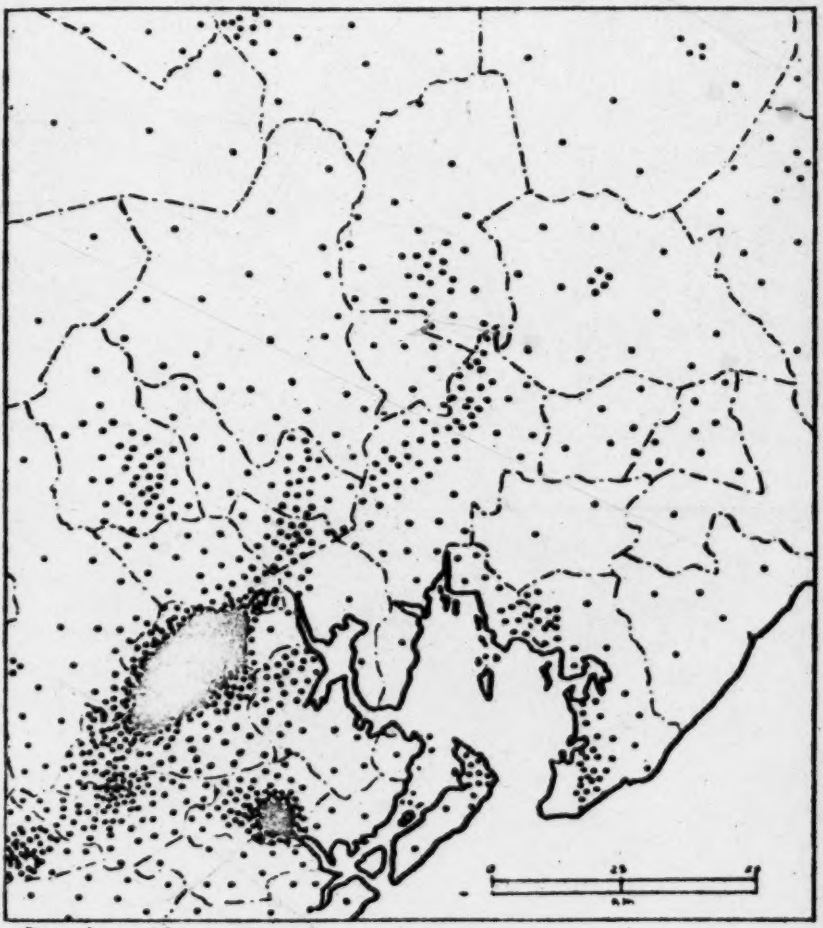

Each dot = 25 hectares

RECONCAVO OF BAHIA

Area in Manioc—1948

Source data modified from Produção Agrícola: 1948.

MAP 22

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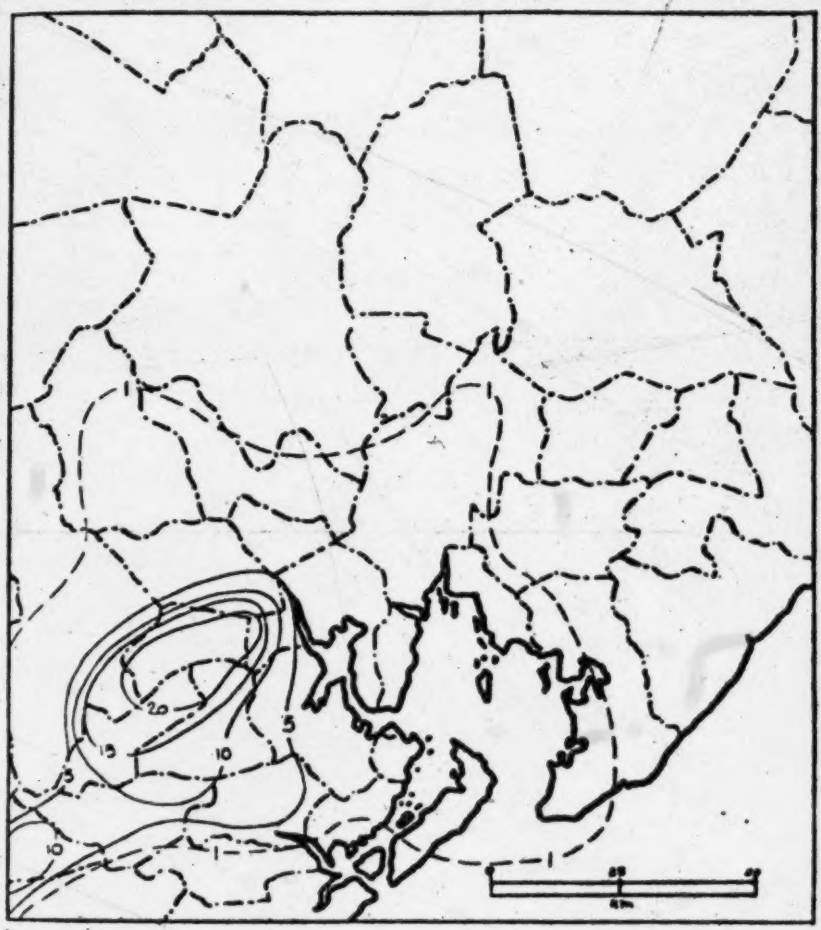

RECÔNCAVO OF BAHIA

Hectares of Manioc per Square Kilometer of Total Area—1948

Source data modified from Produção Agrícola: 1948.

MAP 23

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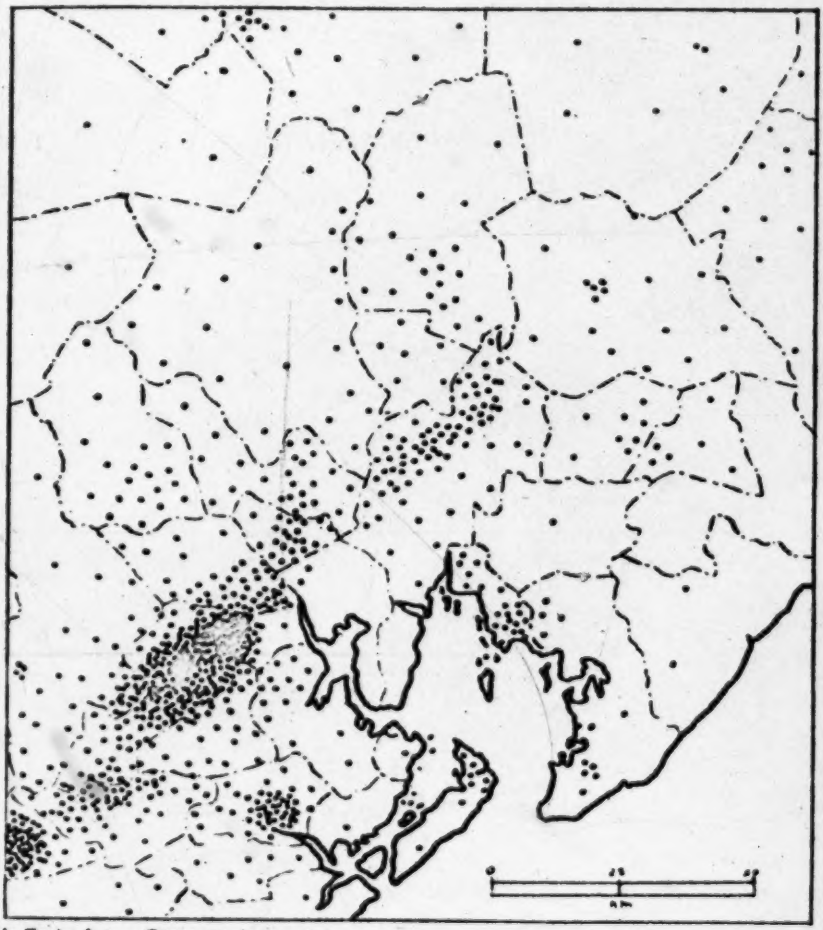

Each dot = 500 metric tons

RECONCAVO OF BAHIA

Production of Manioc--1948

Source data modified from Produção Agrícola: 1948.

Map 24

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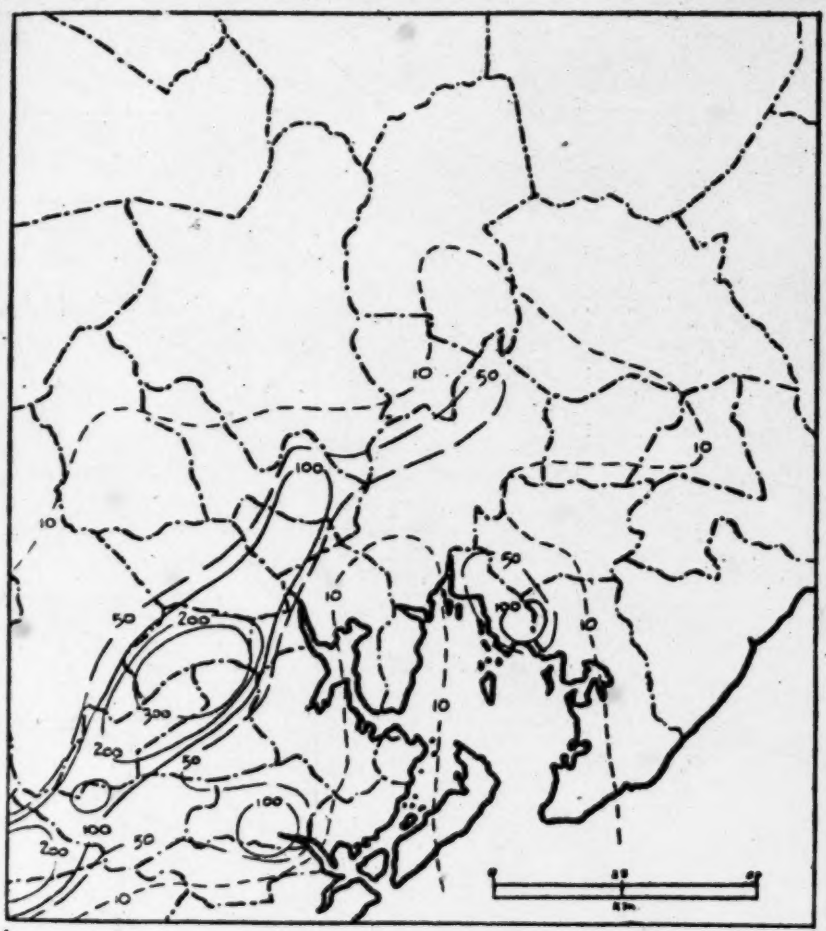

RECÔNCAVO OF BAHIA

Tons of Manioc per Square Kilometer of Total Area—1948

Source data modified from Produção Agrícola: 1948.

MAP 25

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SQ11

244 433 311 manioc and produced 38 per cent of its 393,720 tons of harvested roots. Within this sub-region manioc occupied up to 20 per cent of the total land area, i.e., 20 hectares per square kilometer (Map 23). Despite the [249] intensity of cultivation and the concentration of production, the crop is viewed by the people primarily as a means--subsistence--to an end--[242] leaf tobacco production.[9] Manioc characteristically succeeds tobacco in the field and fallow rotation system and is used to extract the maximum possible value from such nutrients as remain in the soil.[10]

244 249 A close areal and functional relationship between the two crops is characteristic also of the linear zone of manioc cultivation which follows the belt of Intermediate Hills and the inner edge of the Uplands from the Rio Paraguaçu--at Cachoeira--to Irará. Much the same relationship exists in Santo Estêvão in the extreme west of the Recôncavo, where manioc, and tobacco, cultivation is concentrated in a zone of low serras. Apparently tobacco cultivation has been fixed by the greater precipitation around these serras, and manioc is grown in association.

The major southwestern concentration of manioc is continued beyond the Recôncavo along a belt extending through Santo Antônio and into the "coffee zone."[11] The cluster of manioc around the cidade of Santo Antônio is circum-urban, but the principal functional association is with tobacco cultivation, rather than with the small urban market. [443] On the other hand, the concentration of manioc production around the city of Nazaré reflects a dependency on the local urban market and probably on the market of Salvador. Minor concentrations of cultivation in northern Itaparica and around Salvador also are related primarily to the market of the capital city.

244 311 The relative place of manioc within the agricultural system, as measured by the per cent of the total cropland which it occupies, varies widely within the Recôncavo (Map 26). The statistical extremes are

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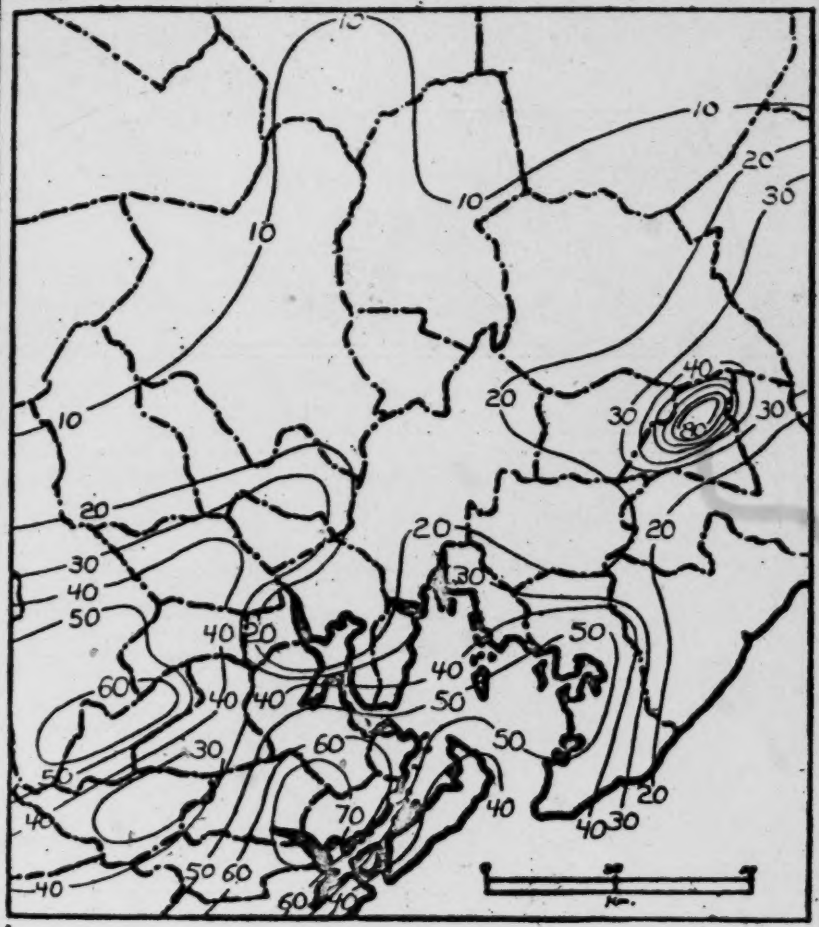

RECÔNCAVO OF BAHIA

Per cent of Cropland in Manioc--1948

Source data modified from Produção Agrícola: 1948.

MAP 26

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 represented by two adjacent municípios of the Eastern and Central
311 Recôncavo--Pojuca, where manioc occupied 81 per cent of the total cropland in 1948, and São Sebastião, where it occupied only 2 per cent. However, the significance of this contrast is diminished when it is seen that the total cropland of all crops in these municípios was only .8 per cent and 4.7 per cent, respectively, of the total land area. In those municípios where over 5 per cent of the land area was cultivated, the range was from 8 per cent of the cropland in manioc--Irará--to 60 per cent--Conceição do Almeida.

244 There are two major zones in which manioc has pre-empted the
241 cropland, both of which are marginal to a belt of commercial production
311 of tobacco, sugar cane, or coffee which follows the forest and scrub-forest transition from the coffee zone northward into the Southwester Recôncavo. This commercial crop belt is paralleled on the east by a zone of manioc cultivation in the forested areas back of the beach line--a zone which is a continuation of an extensive area of monocultural shifting cultivation of manioc centered farther south.[12] Around the city of Nazaré, which lies very near the southern limit of the Recôncavo, as much as 70 per cent of the cropland is in manioc. The cultivation of manioc is also important on the sandy forested zone west of the Bay as far north as the estuary of the Paraguaçu and on the opposite side of the Bay north of Salvador. On the west side of the commercial crop belt, in Laje, Santo Antônio, and the Southwestern Recôncavo, there is another zone in which manioc is the dominant crop. In the dry caatinga the areas of cultivation are concentrated around the low serras west of the Recôncavo. However, the manioc which occupied up to 60 per cent of the cultivated area along the western limit of Conceição do Almeida in 1948 was grown as a part of the tobacco-manioc system.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 311 From the latitude of the head of the Bay northward, manioc appears as a dominant crop only in the município of Pojuca. In the Central Recôncavo, around the perimeter of the sugar cane area, manioc generally occupied, in 1948, less than 30 per cent of the cropland. In the north, [243] along the borders of the Recôncavo, the share of manioc in the cropland dropped to 10 per cent, and it was replaced by corn and beans as the basis of the subsistence economy.

244 311 433 The yield of manioc in the areas of heavy production was relatively low--10 to 15 tons of roots per hectare--compared to the Central Recôncavo, which produced small quantities at 30 tons per hectare (Map 27). These [134] differences in yield are related in part to the difference in soil fertility between the Cretaceous soils of the Central Recôncavo and the sandy loams of the Southwest. In addition, manioc is cultivated alone in the former zone, but follows the soil-taxing tobacco plant on the fields of the Southwest, thus further reducing the yield. The mean yield of manioc in the Recôncavo in 1948 was 14 tons per hectare, which is close to the 13 tons per hectare of Brazil and of the French Cameroons, but much higher than the 7 tons per hectare of Java and Madura.[13]

244 249 Manioc is, then, a crop characteristic of most parts of the Recôncavo and the surrounding zone, except in the sugar cane area and [242] the Tabular Uplands. The area of greatest concentration of cultivation and production is the Southwestern Recôncavo where manioc is integrated with tobacco production in a system of land rotation. In addition, as discussed above, manioc has the greatest relative importance of the crops of two zones in which the total area cultivated is small: the southwestern belt of forested lowland and the drier, scrub-forest Crystalline Uplands.

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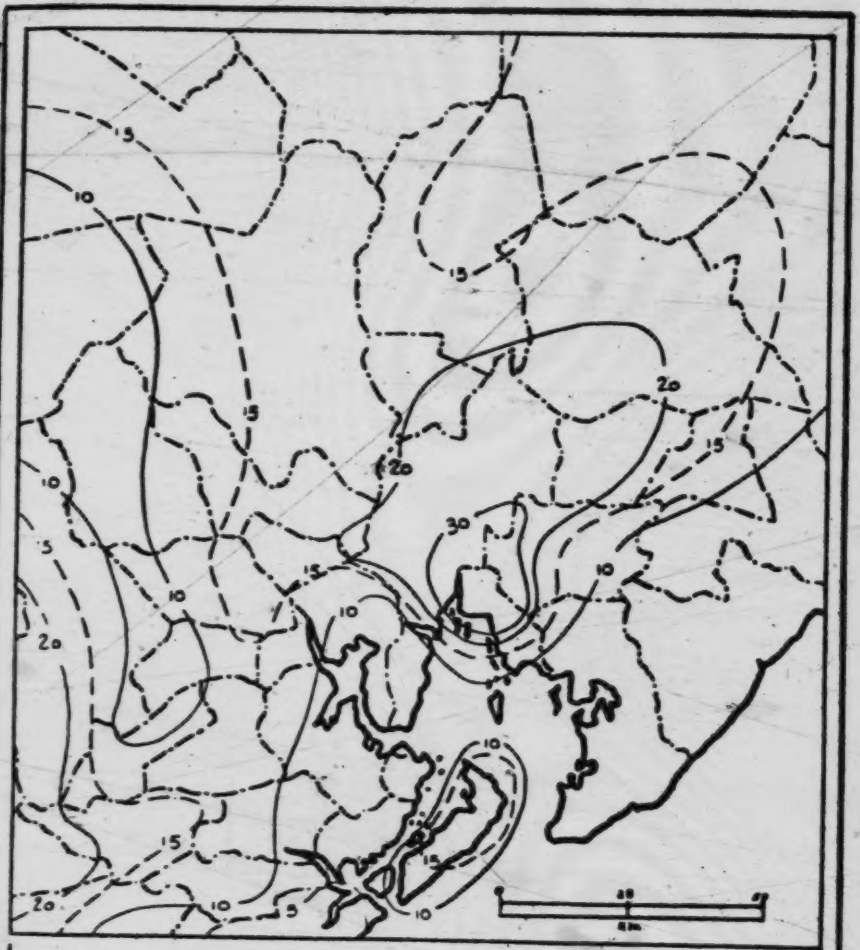
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249 433 is apparent that the production of the Southwestern Recôncavo and of Santo Antônio, the pre-eminent concentrations, fell away as a result of a drop in prices which began in 1947 and continued through the end of the decade. As high quality and high-cost producers, these areas were particularly hard hit by the falling price. On the other hand, Irará grows a cheaper leaf, at a lower production cost, and apparently survived the worst effects of the cut in price. The production in this município declined more slowly and then, in 1950, fell sharply as a result of the sêca (drought) which began in that year.

A comparison of the data for a longer period indicates that although production of the state of Bahia in 1946-1950 was about equal to that of 1931-1936, the cultivated area rose by about 25 per cent. Yields fell steadily during this period; the 900 to 1,000 kilograms per hectare of the early 30's had declined to 750 to 850 kilograms per hectare in the late 40's. The decline in yield, if not centered in the Recôncavo, was at least characteristic of the development of the region. The basic factor in the falling yields almost certainly was the exhaustion of the soil. In addition, manure, always costly, became increasingly expensive and scarce. Tobacco, as has been indicated, is 249 244 433 grown in conjunction with manioc under a land rotation system. The increasing demand for subsistence crops, particularly manioc, for the expanding population has put a continuously greater strain on the soil. [231] At the same time, the expansion of the cultivated area has driven out most of the livestock enterprises, increasing the cost of manure and putting it beyond the reach of many cultivators. As yields began to fall it became necessary to increase the planted area in tobacco and in subsistence crops to compensate the loss. Year by year the fallow period has been progressively shortened as the tobacco-manioc system

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 244 433 has made increasingly greater demands upon the land, at least during the decades between 1930 and 1950. In some areas, such as Cruz das Almas, the mean fallow period seems to have been reduced to a minimum of one or two years during the late 1940's. As the result of these developments, the município seems to be faced with the necessity of either a decrease in production or a radical reorganization of the system of cultivation.[21]

249 24 433 However, tobacco is to Cruz das Almas or São Gonçalo what sugar cane is to the Central Recôncavo--a way of life. Agriculture without tobacco is both economically and culturally distressing to the cultivator of the Southwestern Recôncavo. Unlike the sugar cane planter, the agri-
[178] culturalists of the tobacco zone cultivate crops other than the chief commercial product, but as a cash crop they are very reluctant to accept any substitute. Habit is a very great force in the agriculture of all parts of the Recôncavo.

249 433 A result of the traditional and speculative orientation of the people of the tobacco zone is the extreme importance of tobacco--a commercial non-food crop--throughout the zone. In 1948, six municípios of the Recôncavo cultivated more tobacco than any other crop, and in five others it was second in importance. In only two municípios, Itaparica and Salvador, was it lower than fourth in area occupied.

243 433 Corn. Traditionally corn (milho) is a crop of the caatinga (scrub forest), and its greatest relative dominance is found just northwest of the Recôncavo in the município of Serrinha. It is, however, grown on a small scale throughout the Recôncavo, and there are at least two areas of intensive production. Corn is overshadowed by other crops, particularly manioc, tobacco, and sugar cane, in all parts of the Recôncavo except the North and the Northwest.

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Like manioc and tobacco, corn is an indigenous crop which was borrowed from the Indians in the early phases of European settlement and which became a basic subsistence crop in Brazil. Its cultivation, like manioc, is a characteristic feature of the agricultural landscape over an extensive coastal belt from the Amazon to Rio Grande do Sul and, unlike manioc, beyond into northern Argentina. In Brazil, corn is cultivated on more land than any other crop, and in most states it is either the second or third crop in value. In the Recôncavo it is the fourth ranking crop in area of cultivation, but only the seventh in the total value of production. The cultivation of corn is very closely
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associated, areally and functionally, with beans--"succatosh" is a common crop combination in the Northwestern Recôncavo and the adjoining region.[22]

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Corn also resembles manioc in the purpose of cultivation; it is primarily a subsistence crop for local consumption, but there are surplus producing areas with a rudimentary commercial corn economy. In those areas of the Recôncavo where corn is produced in small quantities, it is almost exclusively a minor subsistence crop which is eaten by the cultivator and his family, though a few ears or a small sack of shelled corn may be sold in the market for local consumption. Such semi-subsistence producers are usually small-scale farmers, squatters, or share-croppers. In the Northern and Northwestern Recôncavo, where cultivation of corn is more intensive, there are occasional large-scale corn growers, but the bulk of the area and production in this zone be-
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[438]
longs to small operators. Even these small producers usually sell their corn at the market--it is exchanged for the cheaper farinha de
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mandioca. In the Recôncavo corn is used exclusively as a human food, and there is no corn-livestock complex.

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Only three municípios of the Recôncavo, all very large, had over 500 hectares of corn in 1948 or produced over 500 tons of shelled corn.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

243 311 It is primarily a crop of the sertão of northeastern Bahia, but it has intruded upon the northern and western perimeter of the Recôncavo (Map 37). In three municípios--Irará, Feira de Santana, and Santo Estêvão--corn is the most extensively cultivated crop. Conversely, it is rarely seen in the humid lowlands and in the Southwestern Recôncavo. In these areas it is found only in very small, widely scattered plantings.

243 433 The mean yield of corn in the Recôncavo was 1.09 tons per hectare, compared to 1.27 for Brazil, 2.46 for the United States, 1.0 for the Belgian Congo, and .81 for Java and Madura. The accompanying map of corn yields shows a somewhat random pattern within the Recôncavo, since the total area and production were very small and local circumstances of cultivation highly variable (Map 38). However, the area of main production northwest of the Recôncavo had a relatively high yield--over 1.5 tons per hectare. In this area, corn, with beans, pre-empts the areas with the most productive soils and the greatest precipitation.

243 244

244 Beans. Feijão, or the common field bean (Phaseolus vulgaris), like manioc, tobacco, and corn, is an indigenous domesticate which became an important subsistence crop during the colonial period. Like corn, beans are more specifically associated with the dry sertão than with the Recôncavo. Most of the beans grown in Bahia are the black variety, feijão preto; the beans are dried and used with charque (dried beef) in a soup which is one of the basic subsistence foods of the Northeast. Beans of this and other similar varieties of the same species are grown throughout Brazil.

[262] [252]

244 433 In area and in quantity of production, beans are slightly less important than corn in the Recôncavo, but the value of the bean crop is almost double that of corn. The patterns of distribution of these two crops are almost identical, and the physical and cultural factors

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 433 [311] involved are very similar (Maps 39, 40, and 41). In 1948 beans occupied 9 per cent of the total cropland of the Recôncavo. While the area of the greatest dominance of corn lies north of the Recôncavo, beans had the greatest relative importance in the west, in the município of Ipirá (Map 42). The reason for this minor difference in concentration is not apparent.

244 311 433 The yield pattern as revealed by the 1948 data is very distinctive (Map 43). Relatively high yields were closely associated with the forest and scrub-forest transition from Santo Antônio in the south to Irará in the north, where, however, less than 10 per cent of the cropland was in beans. In Muritiba, Castro Alves, and Santo Antônio, where joint corn-bean cultivation is not always the rule, yields of both plants were high. In the Northern and Northwestern Recôncavo the yield patterns of the two crops, which are usually intercropped in this area, were very different. No explanation for these differences was found. The mean yield of beans in the Recôncavo in 1948 was 988 kilograms per hectare, higher than the 690 kilograms per hectare of Brazil, the 540 kilograms per hectare of French Equatorial Africa, or the 200 kilograms per hectare of India, but much lower than the 1,220 kilograms per hectare yield in the United States.

249 Sugar Cane. Much of the history and a good deal of the cultural geography of the Recôncavo could be written in terms of sugar cane [433] [178] cultivation. The colony of Bahia was organized around the cultivation of cane, and sugar was the mainstay of the colonial commercial economy until the last half of the nineteenth century. During the colonial period the cultivation of sugar cane acquired a prestige which it has never lost, despite the fact that it is no longer the most valuable nor, it seems likely, the most profitable crop of the Recôncavo.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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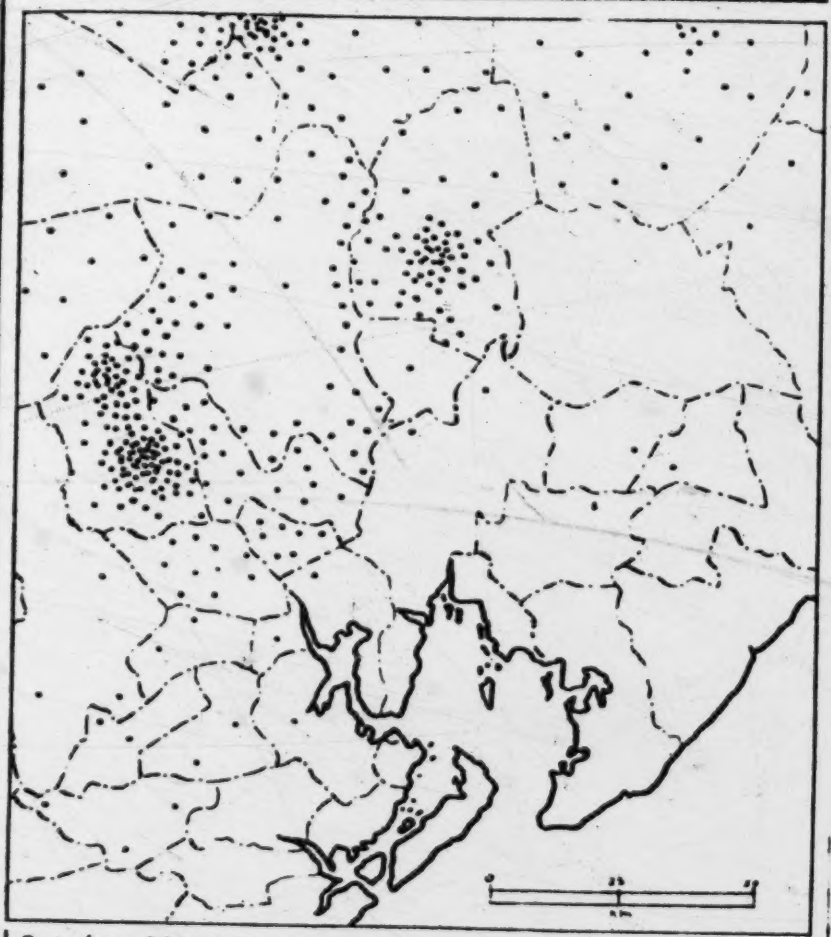

Each dot = 25 hectares

RECÔNCAVO OF BAHIA

Area in Beans--1948

Source of data: Produção Agrícola: 1948.

MAP 39

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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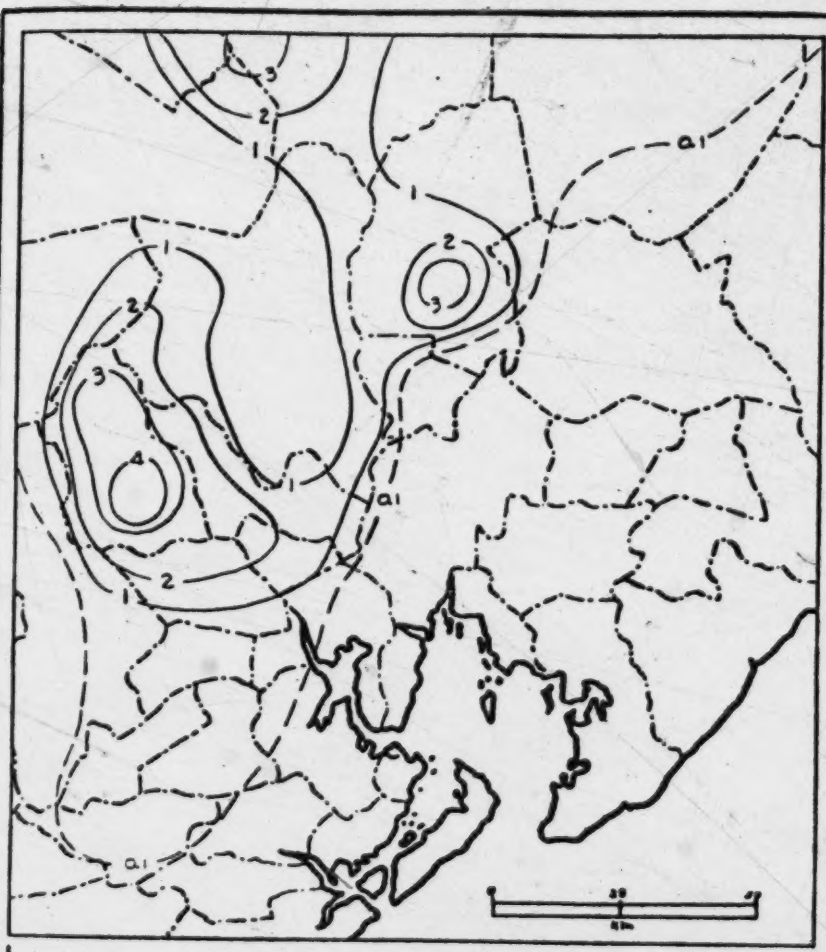

RECÔNCAVO OF BAHIA

Hectares of Beans per Square Kilometer of Total Area—1948

Source of data: Produção Agrícola: 1948.

MAP 40

1:Haskins K-4,5 (1952-1954) 1956 SO11 Bahia Brazilians SO11

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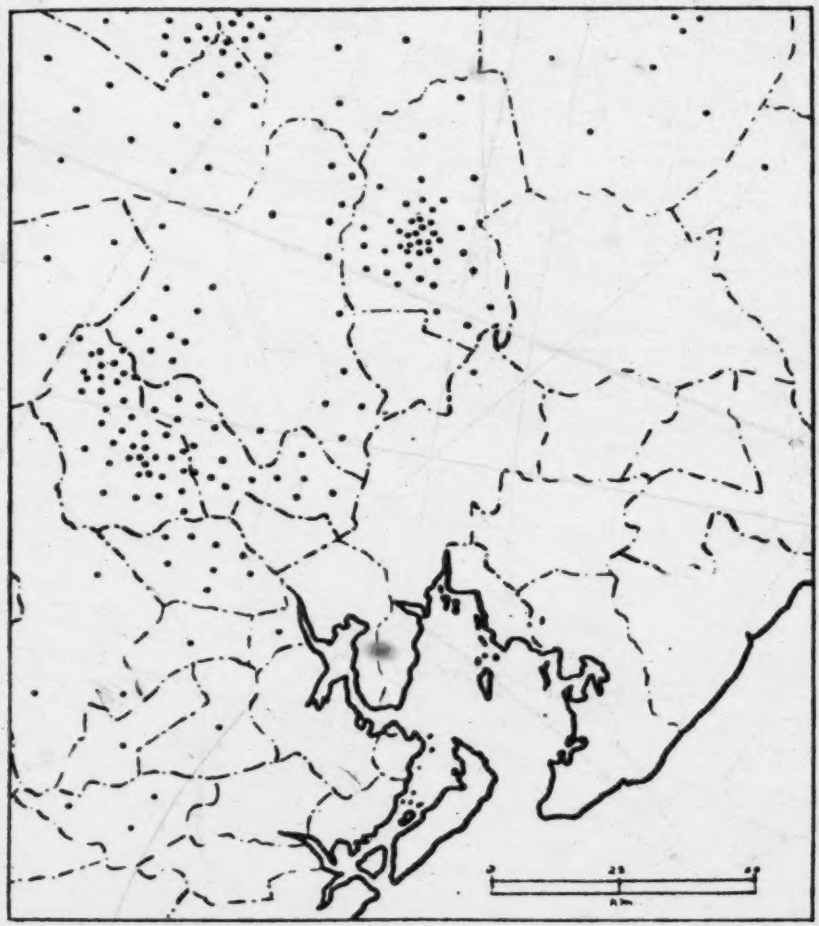

Each dot = 50,000 kilograms

RECONCAVO OF BAHIA

Production of Beans--1948

Source of data: Produção Agrícola: 1948.

MAP 41

1:Haskins K-4,5 (1952-1954) 1956 SO11 Bahia Brazilians SO11

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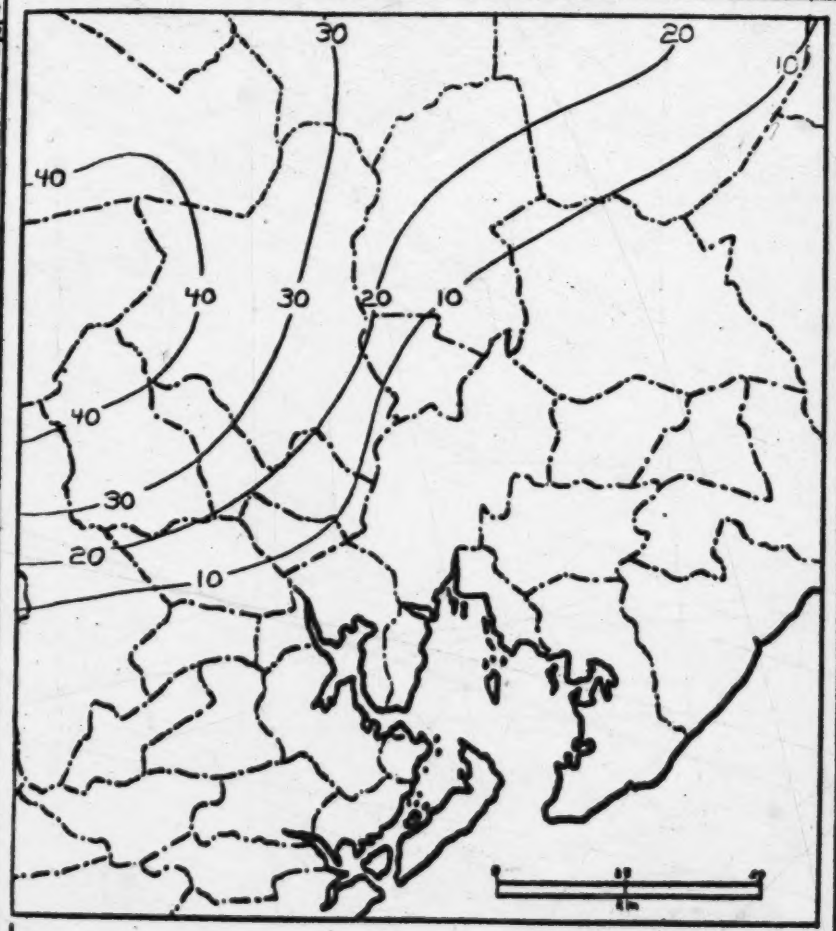

RECÔNCAVO OF BAHIA

Per cent of Cropland in Beans--1948

Source of data: Produção Agrícola: 1948.

MAP 42

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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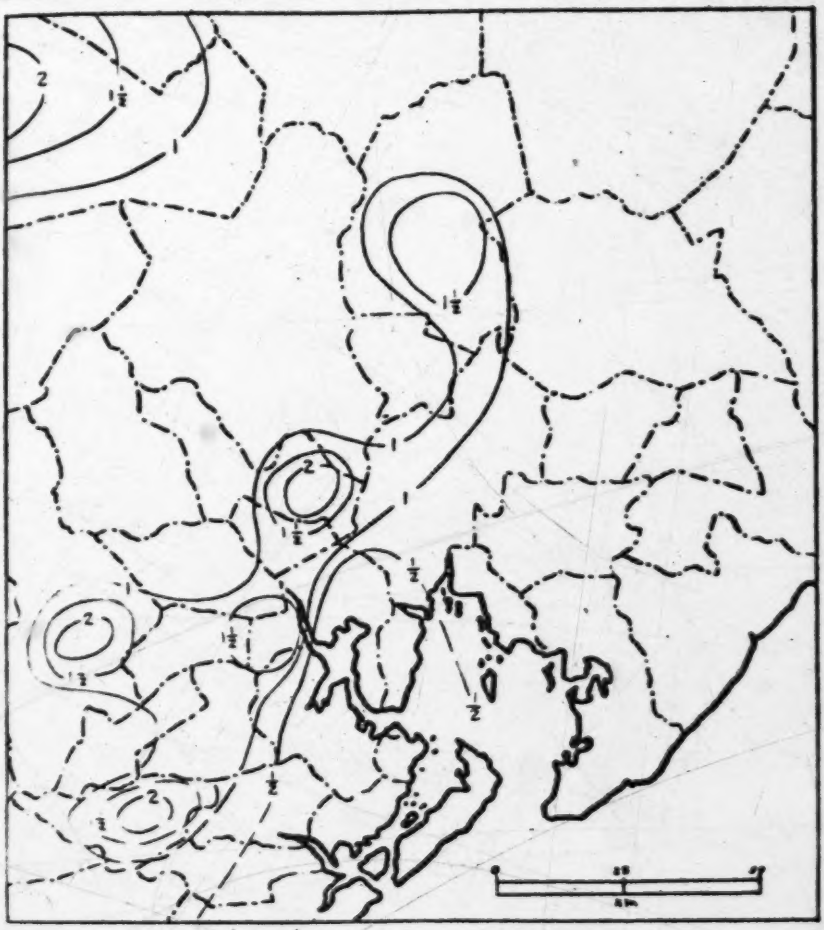

RECÔNCAVO OF BAHIA

Yield of Beans--1948

Tons per Hectare

Source of data: Produção Agrícola: 1948.

MAP 43

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 and Intermediate Hills between and around these zones, but usually on
311 an exceedingly small scale.

249 The yields calculated for 1948 were as follows:
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Santo Amaro	65.7	tons	per	hectare
São Francisco	80.0	"	"	"
São Sebastião	41.2	"	"	"
Cachoeira	37.0	"	"	"
São Filipe	50.0	"	"	"

These may be compared with 38.7 tons per hectare for Brazil as a whole, 35.0 tons per hectare for Cuba, and 89.3 tons per hectare for Java and
249 Madura for the same year. The relatively low yields of Cachoeira and
433 São Filipe are to be explained, at least in part, by the primitive
134 character of cultivation and processing in these more remote areas. São
257 Sebastião is a sort of frontier zone into which the big sugar mills are expanding their operations at the expense of smaller operators, but the methods of production are still less efficient than in the main production area, and the soils are sandier and less fertile. In Santo Amaro, yields are higher on account of generally better soils and techniques, but the demands of the large usinas require intensive and continuous cultivation on even the poorer soils. On the other hand, the less intensive cultivation in São Francisco, where the mills are smaller, allows a freer selection of soils, so that the yields of this area are the highest in the Recôncavo.

244 Sweet Potatoes and Peanuts. Two other American domesticates are
311 grown in the Recôncavo, though on a small scale--peanuts and sweet potatoes. Both are cultivated primarily along the forest and scrub forest transition as auxiliary subsistence crops, in conjunction with manioc and tobacco. There are also scattered plots of these crops in most other parts of the Recôncavo. Neither crop occupied over 1 per cent of the total crop land of the region.

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The total area in sweet potatoes in 1948 was 344 hectares, the total production, 2,565 tons. No single município grew more than 100 hectares nor produced over 1,000 tons (Maps 47 and 48). In Cachoeira and Maragogipe, 3 per cent of the total cropland was in sweet potatoes in 1948. The plants are grown on the slopes and in the sandier valley bottoms of the Intermediate Hills and are sold through the local markets. On a smaller scale, sweet potatoes are grown as a minor supplementary crop in the Southwestern Recôncavo. The mean Recôncavo yield was 7.5 tons per hectare, close to the mean Brazilian 1948-1950 yield of 8 tons per hectare. Sweet potatoes are grown in the Recôncavo both as "garden" crops for home consumption and as minor commercial crops for local exchange.

BB
[438]

The total area in peanuts in 1948 was 550 hectares; the total production was 876 tons (Maps 49 and 50). There is some small commercial production in Maragogipe and in the Northern Recôncavo; in the former, 6 per cent of the total cropland was in peanuts in 1948, and in the latter, from 2 to 5 per cent. Yields calculated for municípios varied from .3 to 3.5 tons per hectare without discernible pattern. The mean yield was 1.6 tons per hectare, higher than the .97 tons per hectare of Brazil and the .89 tons per hectare of the United States.

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Bananas. The banana is the sole important subsistence crop of the Recôncavo which is of old world origin. Brazil is the world's leading producer of bananas, and the main centers of production are in Rio de Janeiro, São Paulo, and Minas Gerais. In the Recôncavo, bananas are grown primarily for subsistence and local exchange, but there are a few small commercial growers. Under the existing system of transportation, the long distance shipment of so bulky, heavy, perishable, and cheap a product is difficult.

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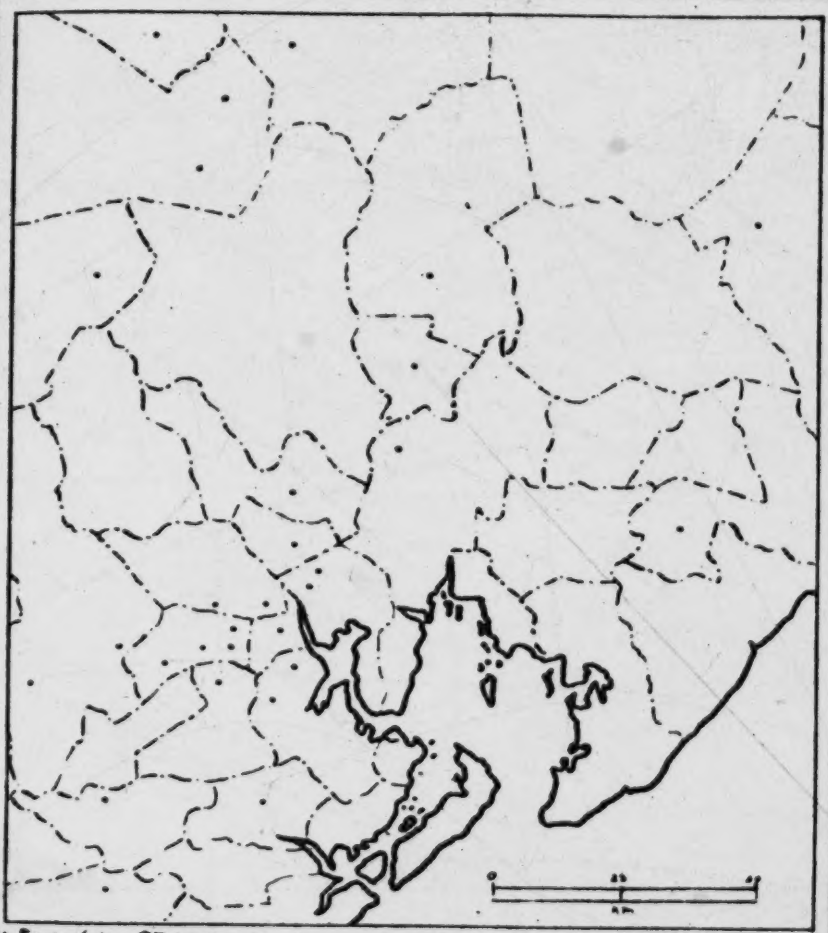

Each dot = 25 hectares

RECONCAVO OF BAHIA

Area in Sweet Potatoes--1948

Source of data: Produção Agrícola: 1948

MAP 49

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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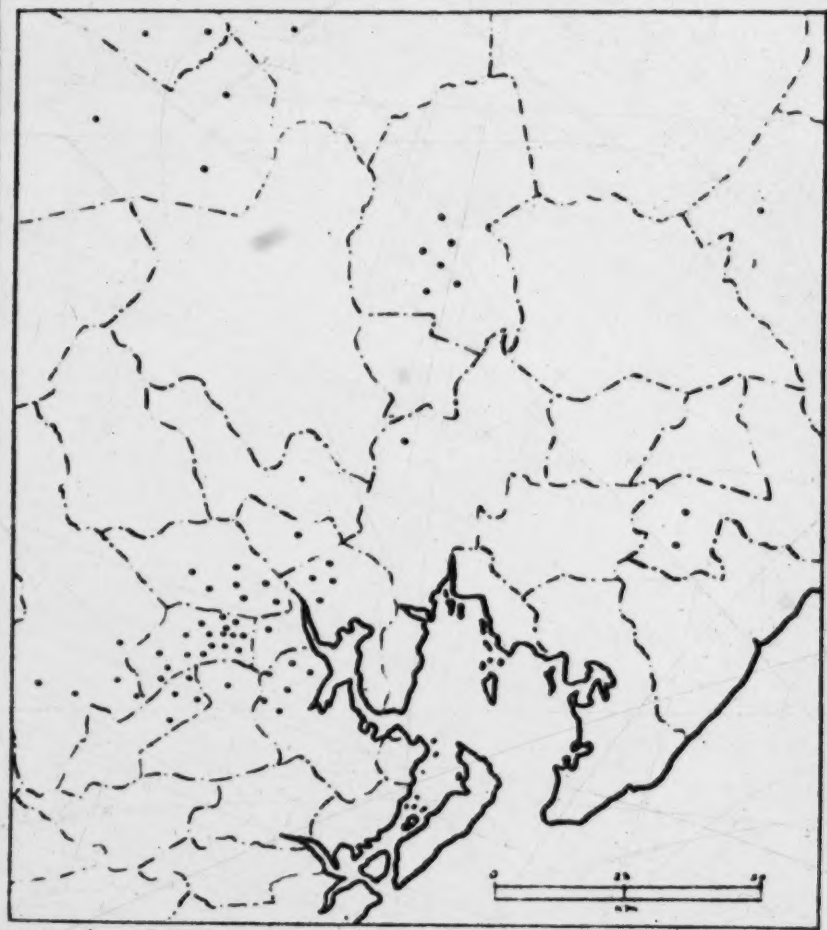

Each dot = 50 metric tons

RECÔNCAVO DE BAHIA

Production of Sweet Potatoes—1948

Source of data: Produção Agrícola: 1948.

MAP 18

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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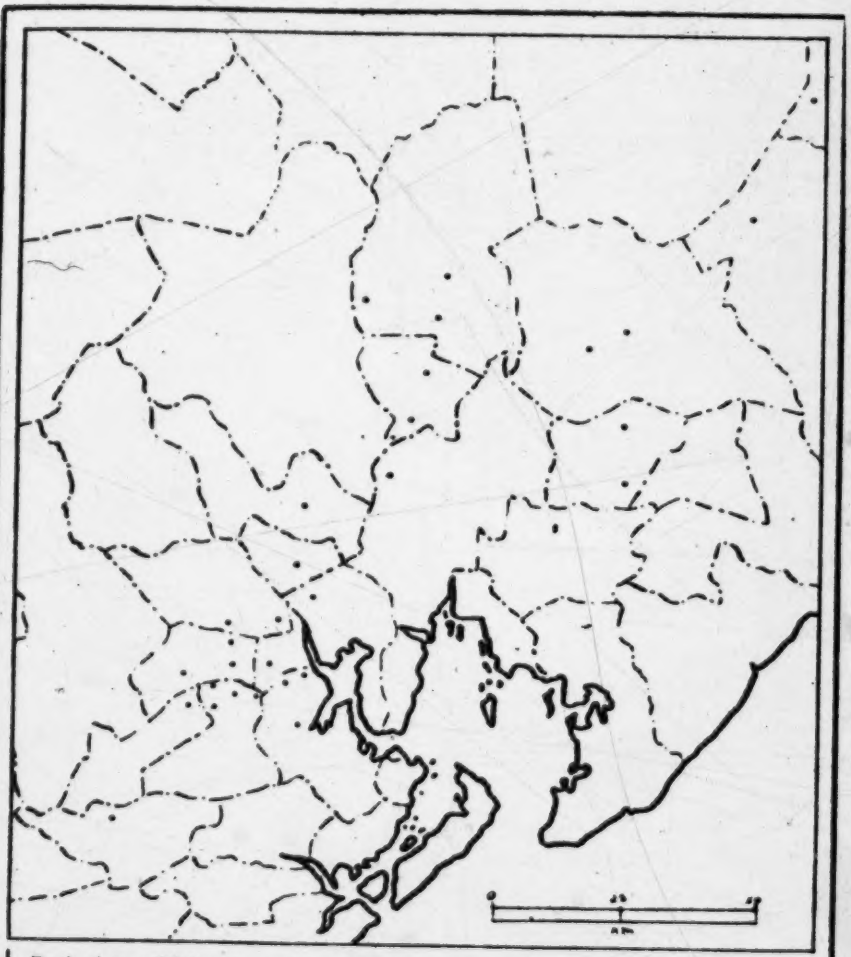

Each dot = 25 hectares

RECÔNCAVO OF BAHIA

Area in Peanuts--1948

Source of data: Produção Agrícola: 1948.

Map 49

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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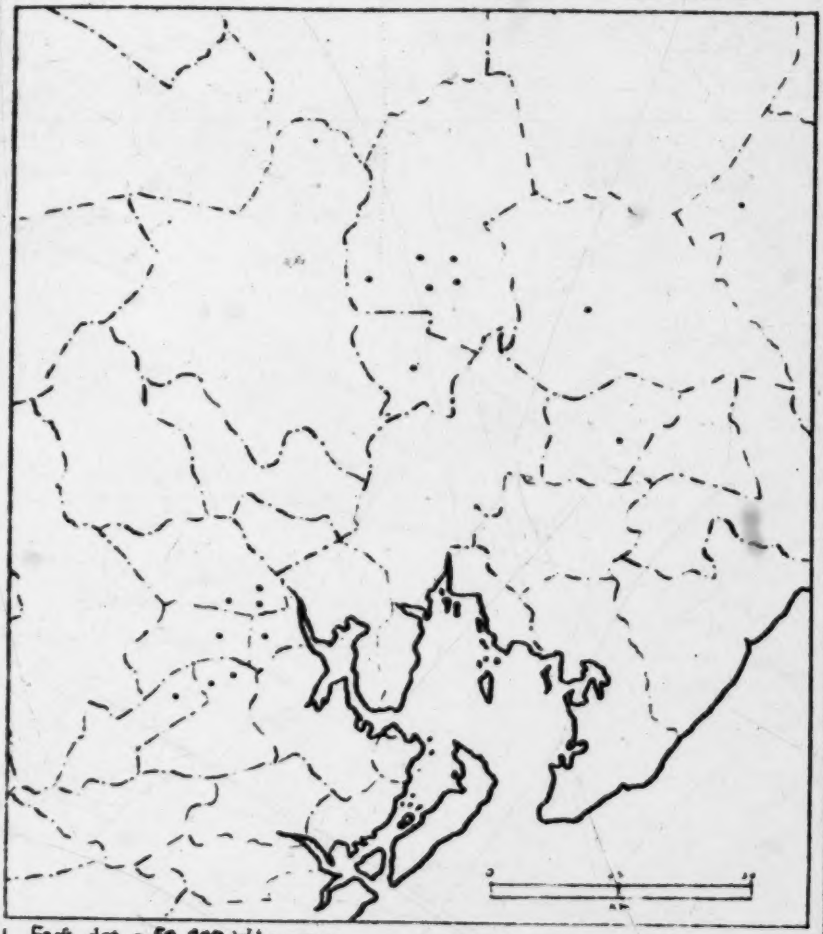

Each dot = 50,000 kilograms

RECÔNCAVO OF BAHIA

Production of Peanuts--1948

Source of data: Produção Agrícola: 1948.

MAP 30

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

241 311 cane in the pockets of Coastal Plain, and coffee and sugar cane in eastern and southern São Filipe. Annuals, chiefly manioc, intrude into the lowlands and hills in two areas: west of the Bay, from Maragogipe to Nazaré; and east of the Bay, in the município of Salvador.

General Distribution of Cropland. The total cropland of the Recôncavo in 1948, based upon the sum of the areas of the individual crops, was about 80,000 hectares--6.4 per cent of the land surface of the region. This proportion compares favorably with the one per cent of the state of Bahia and the two per cent of Brazil which is cultivated. However, a comparison with areas of the same general character in the Northeast of Brazil is more appropriate and more unfavorable; in 1948 both Paraíba and Alagoas had ten per cent of their areas under cultivation in principal crops.[30]

249 311 The most intensive center of cultivation in the Recôncavo is the area of sugar cane production north of the Bay. If the land which is in fallow one year out of every five is added to the area of the cane fields, about 75 per cent of the total land surface of the area was included in the closed circle of cultivation and fallow in 1948. The smaller area of sugar cane cultivation at the head of the Bacia do Iguape had a similar, though less intensive, concentration of cultivated land.

249 244 311 In the Southwestern Recôncavo as much as one half of the total area was in crops in 1948. Most of this land, as has been seen, was in tobacco or manioc. A smaller nucleus of intensive cultivation north of the Rio Paraguaçu centered on the município of São Gonçalo, was also an area of the cultivation of tobacco and manioc. The rest of the northern part of the Recôncavo in which these two crops were

[TEXT CONTINUED ON PAGE 221]

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important had less intensive cultivation than the two principal centers mentioned above.

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Most of the remaining crops of the Recôncavo were either minor subsistence crops of general distribution, not of themselves accounting for any strong concentration of cropland, or were major crops produced in small separated centers of intensive cultivation. The Northwestern Recôncavo corn and bean areas, the coconut plantations of the beach line, the Southwestern Recôncavo sugar cane and coffee areas, and the suburban rings of orange production were zones where the mean intensity of cropland was low or, at best, modest.

There were two zones of very low intensity of cropland which have not been discussed previously because they did not have significant concentrations of individual crops. The belt of Intermediate Hills around
[137]
[231]
the Central Recôncavo sugar cane area is largely forested, the scene of very scattered cultivation, livestock enterprises, and extractive industries. This belt was used, as will be seen, to provide fuel and to maintain a livestock reserve for the adjoining sugar cane area. The forested belt between the beach line and the inland areas of sugar cane and tobacco cultivation were used primarily for extensive systems of cultivation and for the small scale production of livestock. Only around the perimeter of Salvador was this forested belt intensively used, for in this area there were orange groves, manioc gardens, and a few very small truck farms.

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[434]
Expansion of Cropland. There can be little question but that the Recôncavo as a whole was an area of expanding cropland in the 1940's.[31] In no other way could the increased food necessary for the growing population be supplied, for there were not then nor are there now external sources for large quantities of staples, excepting only livestock. There

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241 311 178 [361] are many local signs of the increase in cultivation—expanding rural settlement, overcrowded market facilities, and stories of the "old days" when life was more leisurely and the land problem less severe. Two areas of the Recôncavo are in great contrast as far as the trend of land use is concerned—the Central Recôncavo on the one hand and the outer Recôncavo, especially the Southwest, on the other. As a result of the stabilization of the sugar industry by the Instituto do Açúcar e do Álcool and, undoubtedly, of the high fixed costs of the sugar industry, the area under cultivation in the Central Recôncavo has remained relatively constant. Indeed, since large-scale speculation in the cultivation of cane is no longer feasible, as a result of government control, it is possible that marginal lands have been withdrawn from cultivation or have been converted to other uses. However, the evidence of the present land use pattern, at least in the area north of the Bay, is against this hypothesis--there are no signs of abandoned cane fields and no extensive areas with any form of land use except those associated with the sugar industry. There are indications of the abandonment of cultivation near the lesser sugar cane area north of the Bacia do Iguape, but the state of the abandoned sugar mills suggest that the decline in cultivation took place before the last decade. In general, then, the area in cane probably was relatively stable during the 1940's and the 1950's, at least to 1953.

249 244 311 178 The situation in the areas of the cultivation of tobacco and manioc is more complicated, in part because the economies of these crops are not stabilized. The area in tobacco undoubtedly has fluctuated over a wide range from year to year, although the area in manioc probably has tended to change more steadily, since it is a basic food crop. There seems to be no question but that during the 1940's the area in

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tobacco and manioc increased in the zones of intensive production of both crops. Particularly in the Southwestern Recôncavo does the expansion of settlement, the present critical intensity of land use, the florescence of tobacco cultivation during the early 1940's, soil exhaustion as evidenced by the declining yields, and the testimony of the people of the people of the area attest to the increase during these years. Detailed field investigation in Cruz das Almas, in the heart of the Southwestern Recôncavo, indicated that if the intensity of cultivation shown by the 1948 figure is correct, then the cropland has declined in the years since. In 1948, according to the data, one-half of the total area of the município was cultivated; in 1953 the total land in crops can scarcely have been more than one quarter of the total area, and there were several signs of decline. Although there was no mature second growth, there was a good deal of capoêira de caatinga and capoêira de mata (second growth) which was about one to three meters high, that is, from about two to six years old. Cruz das Almas seems to be the extreme case of a município which went through a period of rapid growth and precipitous decline in these years, but the same processes undoubtedly have taken place in many of the other municípios where tobacco was important. Probably none of these areas have returned to the 1940 level, because of the concomitant increase in the population and the fall in the productivity of the land in the years since.

There have apparently been major expansions of the cropland of two areas which border on the Recôncavo. Serrinha is known as a município of recent agricultural expansion.[32] The growth of the cidade of Serrinha in the last decade is a clear expression of greater agricultural production, although the new cropland is not in the vicinity of the city. Apparently the main expansion was around a group of low serras and

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[127] [25]The official data for banana production have been adjusted, as is shown in Appendix D. According to: Immigration and Colonization Council, Modern Brazil (Rio de Janeiro: Immigration and Colonization Council, 1949), p. 119, a bunch of Brazilian bananas contains an average of 60 fruits and weighs 8 kilograms.

[351] [565] [26]Indeed, bananas are common plants within the city. Each upper class house, perched on top of the ridge, has its banana grove on the declivity behind. In the valley bottoms, banana plants surround the adobe houses of the lower class.

[27]These yields are offered for the purpose of general comparison. The diversity of conversion figures used in estimating the weight of bananas does not allow for precise comparison.

[127] [28]The official data for area in coffee in São Filipe apparently is a three-fold exaggeration, unless the yields are incredibly low. The production data are more reasonable.

[244] [29]Although manioc is not an annual plant, it is usually harvested in the Recôncavo before it is a year old. It seems more useful to classify these plants as annuals or perennials by their respective systems of cultivation rather than by their botanical characteristics.

[30]This comparison is somewhat unfair to Paraíba and Alagoas, since these states both include extensive non-agricultural areas, while the Recôncavo is an area specifically selected on the basis of intensity of agricultural land use.

[128] [31]For a comparison of 1940 and 1948 cultivated and agricultural area, see Appendix F.

[127] [249] [32]The cropland figure for Serrinha, derived from the 1948 data, is 25 per cent larger than the cultivated area given in the 1940 census. A complicating and contradictory line of evidence is supplied by the data on tobacco production, which is usually a good index of crop cultivation changes in this area. The tobacco production of Serrinha showed a decided decline from 1940 to 1948. It can only be assumed, in the light of the obvious growth of the cidade, that there was some expansion, but in food crops rather than in tobacco.

[33]The region which includes these two municípios follows the railroad from Nazaré to Jequié--the Estrada de Ferro Nazaré--and includes all the municípios touched by the line. In general this is thought of as a "coffee zone," but in its eastern section other crops, notably sugar cane and tobacco, displace coffee as the chief commercial products. Where this region approaches the Recôncavo most closely, in northern Santo Antônio, it is difficult to draw the boundary between the two. However, in 1948, even in 1953, the basic economic associations of Santo Antônio were with the railroad zone.

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241 311 In many municípios on the north, west, and southwest of the Recôncavo, where corn and beans were the first and second crops, manioc and tobacco were third and fourth or vice versa. On the other hand, sugar cane was rarely a significant crop in any município where either corn, beans, tobacco, or manioc occupied a leading position.

128 241 311 Crop Combinations and Monocultures. The crop combinations shown on Map 71 and Map 72 exist on two levels, as statistical combinations of the crops of various municípios and as functional associations of crops grown in an interdependent system.

241 311 The statistical crop combinations of the Central Recôncavo do not correspond to functional systems of cultivation, for although sugar cane, manioc, and tobacco are produced within individual municípios, the cultivation of sugar cane is entirely separate. The manioc and sugar cane of São Filipe and the tobacco and coffee of São Félix are also cultivated separately. The statistical combinations, therefore, merely summarize the economic specialization and diversification of the município economies. The tobacco-manioc and the corn-bean combinations of most municípios of the perimeter of the Recôncavo, from Alagoinhas on the northeast to Conceição do Almeida on the southwest, signify functional as well as statistical relationships. On the other hand, monocultural systems dominate within the Central Recôncavo and in a few other places. The areas in which the individual functional combinations and monocultures predominate are delimited as nodal crop regions on Map 73. The arrows on the map (Map 73) indicate the intermeshing of crop regions in the transitional zones.

249 244 311 The most extensive of the crop regions belongs to tobacco and manioc. In this region, which extends from the Southwestern Recôncavo in a long arc to the Eastern Recôncavo, at least 70 per cent and usually

[TEXT CONTINUED ON PAGE 240]

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80 per cent of the total cropland was in these two crops in 1948 (Map 74). A minimum of 20 per cent of the total cropland of all parts of the region was in tobacco, and except for a break in Coração de Maria and northern Santo Amaro, in manioc. Associated with this region were two small areas in which one of the components dominated the other--tobacco dominated in Santo Antônio and manioc in Pojuca.

The relationship of tobacco and manioc area varied widely within this region of their most intensive cultivation (Map 75). The mean for all the municípios of the region was 42 per cent of the total cropland in tobacco and 36 per cent in manioc. The theoretically ideal "duoculture" was approached in Cruz das Almas, with 54 per cent of the total cropland in tobacco and 42 per cent in manioc. The ratios of the area in the two crops in individual municípios is indicated in the list below. Only in Muritiba and Cruz das Almas did the areas of the two crops have a relative balance. In the southwestern part of the region, tobacco was ascendant in Santo Antonio and manioc in Conceição do Almeida.

Ratio of Tobacco and Manioc Area

Santo Antônio	Tobacco	3.50 to 1
Conceição do Almeida	Manioc	2 to 1
Cruz das Almas	Tobacco	1.25 to 1
Muritiba	Manioc	1.50 to 1
Conceição da Feira	Manioc	2 to 1
São Gonçalo	Tobacco	3 to 1
Coração de Maria	Tobacco	4.50 to 1
Santo Amaro*	Manioc	2.50 to 1
Catu	Tobacco	3 to 1
Pojuca	Manioc	20 to 1

*These figures are for the whole of Santo Amaro. Probably the ratio in its tobacco-manioc zone would be about 3 to 1 in favor of tobacco.

North of the Rio Paraguaçu the position of tobacco vis-à-vis manioc became progressively stronger through Coração de Maria and continued strong into Catu, where cultivation of tobacco abruptly terminated. Pojuca had a manioc monoculture, with only 4 per cent of the cropland in tobacco and 81 per cent in manioc.

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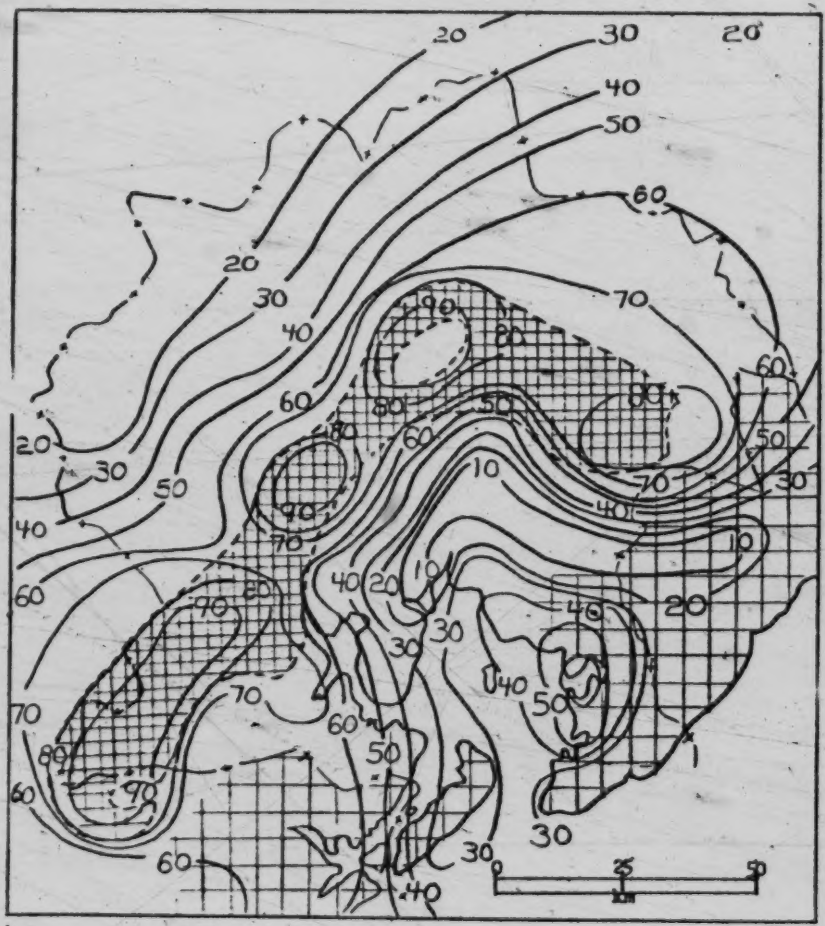

MAP 74

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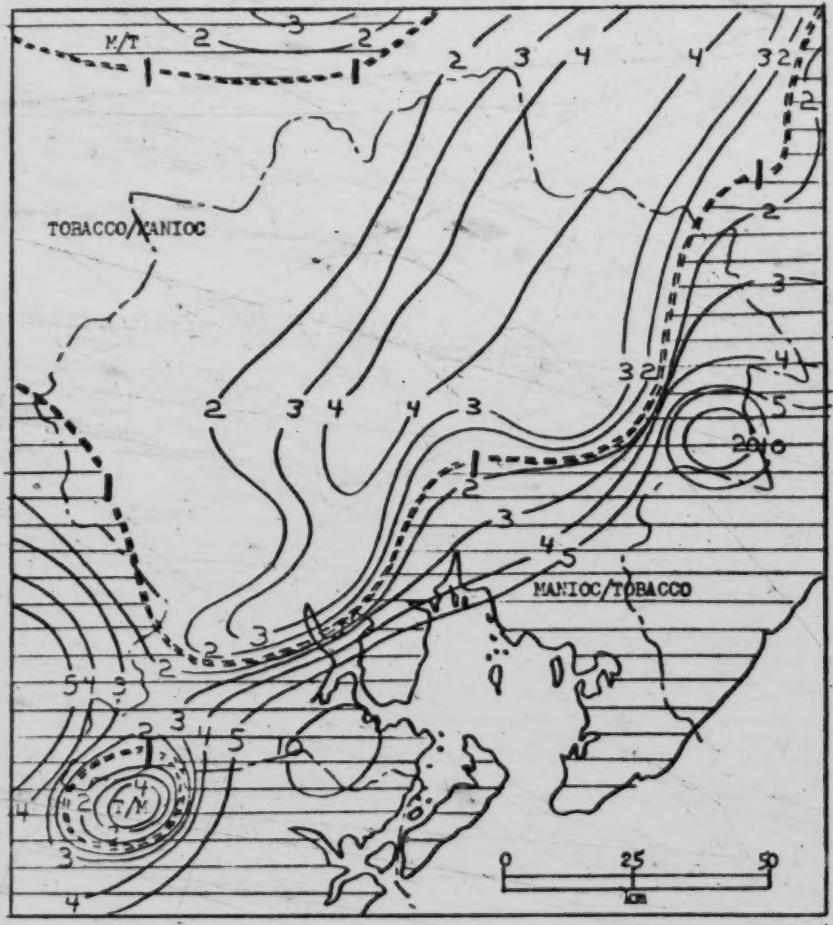

RECÔNCAVO OF BAHIA

Relationship of the Cultivated Area in Tobacco and Manioc—1948

Tobacco/Manioc (T/M) - Area in tobacco exceeds area in manioc
Manioc/Tobacco (M/T) - Area in manioc exceeds area in tobacco

MAP 75

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 The physical setting of the tobacco and manioc region is distinc-
244 tive in terms of the particular combination of topography, soils, climate,
311
13 and vegetation which are joined along its crescent axis. The region lies along the semi-circular edge of the interior upland, overlooking the Bay and the Coastal Plain. In the south the fields of manioc and tobacco occupy the upper surfaces of the Crystalline Uplands and the adjacent Intermediate Hills. In the north, cultivation shifts to the summits and upper slopes of the Intermediate Hills, although there is some concentration on the extreme southern edge of the taboleiros. Thus the region occupies the deep flat-lying residual crystalline soils in the south but in the Tertiary soil zone to the north follows the slope lands where there is more rainfall and perhaps better local soils. The close correspondence of this region with the forest and scrub-forest transition has been repeatedly emphasized. A traverse across the tobacco-manioc region anywhere between Conceição do Almeida and Feira de Santana takes one from rough hills with at least scattered patches of broadleaf evergreen forest to flat uplands with cactus, thorny brush, and licuri palms.

249 A comparison of the map of population (Map 21) and of the rela-
244 tionship of tobacco and manioc cultivation (Map 75) points up the neces-
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161 sity for local sources of basic subsistence products. In the Southwest,
361 where rural populations are relatively dense and where there are a number of large villages and towns, manioc tends to be cultivated over a greater area than does tobacco. In the tobacco-manioc region north of the Rio Paraguaçu, where tobacco is usually the leading crop, the density of rural population is lower, and there are no towns and only
[438] a few large villages. Thus there is close relationship between the relative intensity of manioc and the size of the local market.

175 The recent historical pattern of agriculture in the tobacco-manioc
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244 region can be reconstructed only on a general level. Cachoeira, which

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Cachoeira, which formerly included most of the western part of the region, was the center of the production of tobacco for use in the slave trade. The growth of the trade in leaf tobacco in the nineteenth century brought great changes to the region, for it made tobacco a major commercial product in its own right, no longer dependent upon the slave trade. Eventually this development gave the region of tobacco production a greater economic importance than the sugar cane region, although it remained subordinate in political and social influence. The development of the new tobacco economy also gave the region a greater superiority over the sertão, which could satisfactorily produce fumo em corda, but could grow only the poorest grades of fumo em fôlha.

Probably the tobacco-manioc region supplied manioc as the subsistence food of the sugar economy, since it is the only nearby area which was a center of manioc production. Perhaps manioc was produced in the sugar cane zone, but in view of the intensity of sugar cane cultivation, this seems doubtful. In any case, the present relative level of manioc production in this crop region probably dates from the nineteenth century development of cigar tobacco production.

The second basic crop region of the Recôncavo is the sugar cane monocultural area. It is sub-divided into a major zone, in Santo Amaro, São Sebastião, and São Francisco; a minor zone in Cachoeira; and an outlier in São Filipe. It is estimated that in the first two zones 90 per cent of the cropland was in cane in 1948. In the São Filipe outlier of the sugar cane region the proportion seems to have been lower--perhaps 50 per cent of the cultivated area.

The physical association of the sugar cane region north of the Rio Paraguaçu and the Bay is relatively simple--a humid and formerly forested undulating plain composed of mixed Cretaceous soils--massapê, salão, and aréia. In São Filipe the land is rougher, but the sugar cane is grown upon heavy soils similar to the Cretaceous series.

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249 The portion of the sugar cane region north of the Bay is an area
161 of relatively dense rural population, with a large number of villages
361 and plantation settlements and one city--Santo Amaro. The remaining areas of the sugar cane region have only moderately dense rural populations and no major urban centers, although the cidade of Nazaré is very close to the southern border of São Filipe.

[128] The tremendous historical significance of the sugar cane region has been discussed at length in the section on the historical setting of the
249 Recôncavo. As far as the sugar cane zone of Santo Amaro, São Francisco,
178 and São Sebastião is concerned, the extent of the region does not appear to have changed very much since colonial times. Old engenhos are found throughout the zone, indicating past cultivation in all areas now in cane. The present usinas cultivate sugar cane intensively clear across the Cretaceous zone, so that it is not likely that the cane area has contracted. However, there are several abandoned engenhos and settlements on the north and east shores of the estuary of the Paraguaçu which seem to indicate that sugar cane cultivation was formerly more extensive around the Bacia do Iguape.

The two intensive crop regions of tobacco and manioc and sugar
244 249 cane, as outlined above, can be viewed as nodal areas which are basic
311 to the regional distinctiveness of the Recôncavo; they are for all practical purposes included totally within its limits; their crop patterns are not duplicated in any nearby area; and they include within their boundaries a very large part--and the most productive part--of its agricultural area.

241 In distinction to the above intra-Recôncavo regions there are
311 at least three crops which overlap the borders of the Recôncavo, forming crop regions which have their most characteristic development in adjoining areas. The Atlantic coast of Salvador and Itaparica supports

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245 311 The Atlantic coast of Salvador and Itaparica supports a coconut monoculture--a monoculture which is most strongly developed north of the Recôncavo in Camassari and Mata de São João. The actual area of the coconut monoculture within the Recôncavo is slight, and beyond this monocultural zone, coconut cultivation is rarely significant within the region.

The coconut monoculture lies between the littoral forest and the beach in Itaparica and between the agreste and the beach in Salvador and in the municípios farther north. Except in the município of [161] 162 [361] Salvador, the rural population of the coconut area is not dense. The typical settlement of this zone is the fishing village, sprawled over the beach near the mouth of a small stream. Inland the population is scattered.

243 244 311 A much more important crop system intrudes upon the Northwestern Recôncavo—the corn-bean system. The nuclear area for this system seems to lie in northern Serrinha and in the municípios bordering upon the state of Sergipe. The area in which over 80 per cent of the cropland was in corn and beans in 1948 overlapped the borders of the Recôncavo into western Feira de Santana and Santo Estêvão--a zone of low serras (Map 76). In this zone the area in corn was from one to two times the area in beans (Map 77).

[134] Most of the soils of this region are either crystalline or Tertiary sands, but the pockets of soil which are actually cultivated are almost invariably heavier and more water retentive than are the sandy upland soils of the taboleiros. The corn-bean region generally [162] has a small but nucleated rural population and a few medium-sized cidades, which are the only towns of the very large municípios which are char- [361] acteristic of the area. However, the part of the corn-bean region which overlaps the Recôncavo has a number of villages and hamlets in the valleys of the serras.

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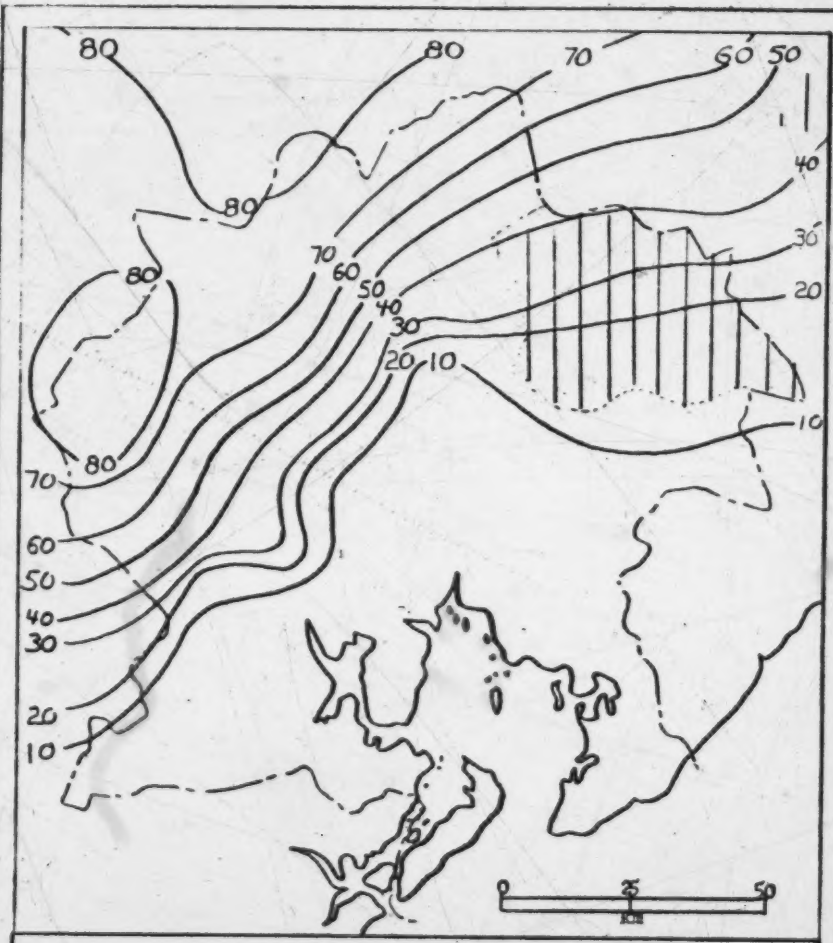

RECÔNCAVO OF BAHIA

Per cent of the Total Cropland in Corn and Beans—1948

Shaded area - Corn only

MAP 76

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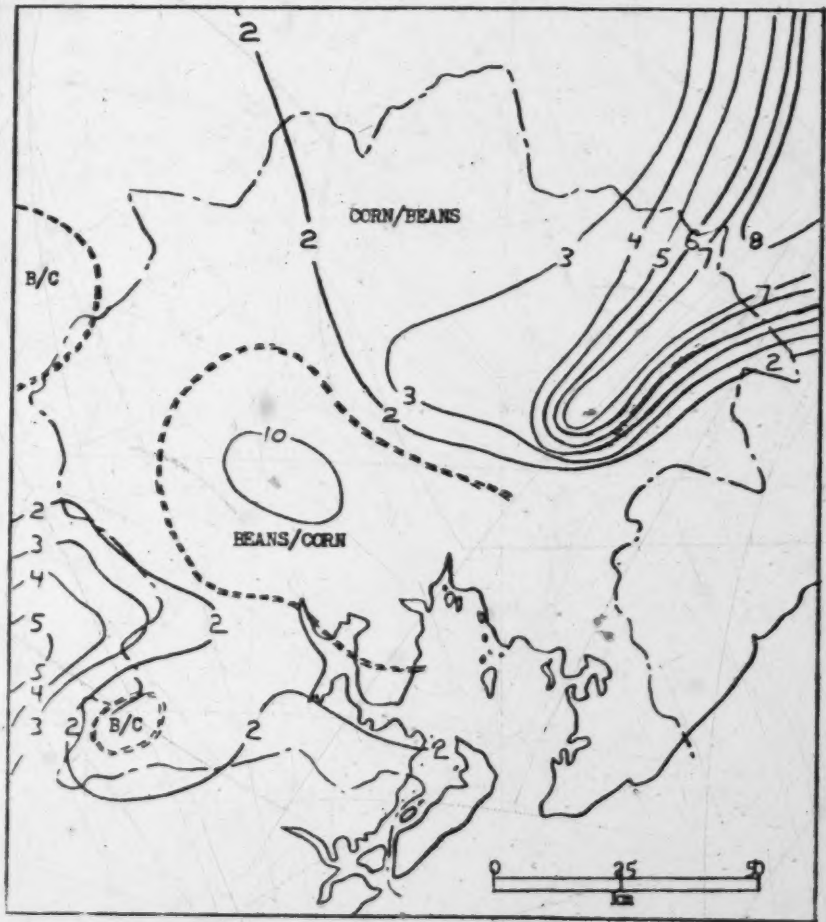

RECÔNCAVO OF BAHIA

Relationship of the Cultivated Area in Corn and Beans—1948

Corn/Beans - Area in corn exceeds area in beans
Beans/Corn (B/C) - Area in beans exceeds area in corn

MAP 77

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

241 311 Southwest of the estuary of the Rio Paraguaçu, in Maragogipe and São Filipe, the crop pattern becomes very complex, as is shown by the relative distribution of cropland in São Filipe:

Manioc	33	per cent
Sugar cane	28	" "
Coffee	25	" "
Tobacco	11	" "
Peanuts	1	" "
Corn	1	" "

Plus small areas of beans, oranges, bananas, sweet potatoes, and coconut.

174 245 249 311 It is very likely that there has been a historical connection between the coffee culture of São Filipe and the main coffee zone far to the southwest. Apparently the development of tobacco cultivation in Santo Antônio has severed this connection.

249 244 221 Cultivation Systems--Tobacco and Manioc. The "ideal" system of cultivation of tobacco and manioc[1] in the tobacco-manioc region has the following general patterns:

(1) In mid-February a small tract, very commonly with an area of one tarefa[2] but sometimes larger, is cleared in the capoeira de caatinga (second-growth scrub-forest) or the capoeira de mata (second-growth [412] littoral forest). Generally the capoeira is low brush, two to five feet tall, which is easily cut with a facão--a long heavy knife which is a universal agricultural tool. Any heavy waste material that can be moved is dragged away from the plot; if there are tree stumps, they will not be grubbed out.[3] Sometimes the waste material on the surface of the field is burned, but this is by no means universal.

(2) A favored spot, either within the cleared field or in the adjoining capoeira, is prepared for a seed bed. Usually a site on the edge of a wood or near a steep slope is selected. Any available waste materials--corn stalks, old tobacco plants, weeds, brush, pieces of wood, and the like--are piled on the small plot, allowed to dry, and then burned.

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221 (3) When the first rains come, the soil of both the seed bed and the fields are worked up with a hoe so that all vegetable matter is buried and all weeds turned under.

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[417] (4) If possible the land is fertilized. Under "ideal" circumstances cattle are penned nightly over the area by means of a small temporary corral. The corral may be maintained for a long period over the seed bed, but on the field it is moved frequently so that the whole area is fertilized. Generally the resulting manure is left exposed to the sun and rain until planting time. However, this "ideal" method of fertilization is rare. A very large number of tobacco cultivators have no cattle—they are too poor and their operations are too small for livestock. Most cattle are held by fazendéiros (ranchers) who do not themselves grow tobacco. Moreover, the intensiveness of cultivation keeps the cattle population too small to provide enough manure for all local needs. Usually it is necessary to buy fertilizer. Cattle manure is sometimes purchased from a local fazendéiro. More and more, however, the tobacco cultivators are dependent upon cattle, or better still, goat manure which is trucked into the Recôncavo from the sertão. The manure is spread over the seed bed to a depth of about one inch and over the field in such depth as the quantity allows.

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221 (5) From mid-April to the end of May, depending upon the weather and the condition of the tobacco field, the seeds are planted. Almost without exception the seeds are taken from completely exhausted tobacco plants of the previous year, plants no longer able to produce salable leaf. The soil is broken open and loosened, and the seeds are sown directly into the fertilizer. Since the fertility of the seeds is very low, they are sown very thickly. The seed bed is fenced but is rarely covered. In sixty to seventy days the seedlings are ready for transplanting.

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221 (6) In June, as the rains increase and as the seedlings are ready, the soil in the field is again broken, and small ridges about 18 inches apart are made with a hoe. Occasionally manure is put into the hills at this stage in place of earlier fertilization. Then the young seedlings are planted in the ridges and a small quantity of water added. Ten days or two weeks later there is a replanting where the original seedings have failed.

(7) A few days later the ridges are further hilled up. Thereafter the field is kept clean with a hoe.

(8) When tips begin to form, about two months after planting--late July or early August--the plant is topped so that six to ten leaves remain.

(9) About three weeks later the whole upper stalk is harvested. Two or three shoots near the ground are then allowed to develop. These shoots are topped, and eventually their leaves are harvested. As many as eight separate harvests are made from the shoots, and often this form of harvest continues into December.

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276 (10) The harvested tobacco is tied to a long pole or rack and hung under the roof of the dwelling, beneath the eaves, or occasionally in separate thatch and adobe "barns." If the weather is damp, a fire is used to hasten drying. After they are thoroughly dried, perhaps three or four weeks, the leaves are cut down and stripped from the stalks. They are then graded, tied into bundles, and laid aside until they are sold, or if the farmer is a large producer, until a fermentation bulk is assembled. The entire season's harvest is piled on the stack, and it is sold to the buyer at the end of the year.

[442]

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244 The sequence of cultivation following the harvesting of tobacco is as follows:

(1) The field is turned with a hoe--if some tobacco plants are

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249 still prod ing, they are carefully left in place--and narrow, shallow
244 trenches eighteen inches or two feet apart are dug across the field. Segments of manioc stalk, freshly cut and two to four inches long, are planted in the trenches and covered.

(2) When the manioc appears, the plants are slightly hilled, and the field is kept clean.

(3) Any time after six months, but if conditions are not too pressing after nine months, the roots are dug up with a hoe. The disposition of the manioc roots will be discussed in a later section on processing.

(4) The field is re-planted to manioc until it will no longer produce a reasonable yield--one to four years depending upon the fertility.[4]

(5) The field is abandoned to wild vegetation and used as a rough pasture, or, if land is in very short supply, it is fertilized and planted to tobacco.

There are a number of problems which lead to departures from the ideal system of cultivation discussed above:

(1) In many areas where the intensity of cultivation is extreme, no second growth is available, and it is necessary to take fields directly from the cultivation of manioc, or other crops, to the planting of tobacco. It is important to remember that by no means all the soils of the tobacco-manioc region are suitable for tobacco cultivation, even [134] in such favorable centers as Cruz das Almas or São Gonçalo. Only the lighter, sandier soils of the hill tops and upper slopes and occasionally the porous soils of the basins are used for tobacco. These tobacco soils are popularly considered to be "poor," because crops other than tobacco or manioc do not thrive upon them.[5]

[237] (2) A key problem in the main areas of tobacco-manioc cultivation

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249 is fertilizer. Most of the manure is purchased with money borrowed from
244 the tobacco buyers or local merchants. The rise and fall of the produc-
237 tion, yield, and quality of tobacco in the various municipios of the Recôncavo can be explained to a considerable degree by two factors: (1) the availability of loan capital, and (2) the variation in precipitation. Probably the local supply of capital is more variable than the rainfall. Moreover, the quality of the manure available is usually poor. The manure of grass-fed cattle is a mediocre fertilizing agent, and probably the manure produced from the capoéira de caatinga upon which most cattle feed is even more inferior. Goat manure is preferred, because it is believed that it produces both a larger crop and a higher quality leaf, but it is very expensive. Because those who can afford goat manure usually are also the more efficient and careful cultivators, it is difficult to be sure whether it is superior fertilizer or better care which produces the quality leaf.

The manure which is secured from sources within the tobacco-manioc zone has almost invariably deteriorated because it has been left for long periods in the sun and rain. The more expensive fertilizer imported from the sertão is of a better quality, both because it comes from a drier zone and has thus suffered from less leaching in the corral and because it is kept in piles so that only the surface material is open to the elements.

In general every possible cruzeiro that can be begged or borrowed is spent for manure, but if none can be bought, the cultivator will haul black soil (crystalline massapê) from the bottom lands and spread it over his field. Failing that, he will plant without fertilizer in a desperate attempt to produce a crop which will enable him to eke out the following year. Even if relatively fresh soil with a good growth of capoéira is available, the cultivator can produce only a very small

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crop of poor tobacco without the application of manure. Commercial fertilizers are beyond the means of all but a very small minority of cultivators. Those large growers who have experimented with commercial fertilizers report unfavorable results, presumably because of excessive leaching in the porous soils.

(3) The system of seed selection is illustrative of the general crudity of cultivation. As indicated above, the seeds are taken from the old and repeatedly harvested plants of the preceding season. The only criterion for selection is survival--the seed plant continued to produce longer than the rest of the crop. This does not mean that it produced more leaf or better quality--indeed, the opposite is often the case. Occasionally better seeds are available from the federal or state government, but the cultivators take little interest.

(4) The practice of harvesting the entire stalk or shoot at one time increases the variation in quality, since there are appreciable differences in the stages of development of the leaves. Immature leaves do not cure properly, while overripe leaves will produce only inferior grades.

(5) The primitive methods of drying and fermenting further reduce the quality of the leaf. Where the leaves are dried indoors over the fire, they acquire a smoky character. Frequently the debts of the cultivator force him to sell part of his crop prematurely so that a bulk large enough for fermentation is not assembled. On the other hand, if a large bulk of leaf is accumulated for curing and fermentation, there is always the risk of scorching, since thermometers are never used to check the temperature. A common abuse, and a costly one to the cultivator, results from delay in stringing the leaf up to dry. If the freshly cut leaves are allowed to remain piled in the sun before hanging, the green color is fixed. This damage cannot be

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311 North of the Paraguaçu, modification of the "ideal" system is more frequent, especially in municípios where the area in cultivation is relatively small. In Coração de Maria, for example, only 4 per cent of the area was cultivated in 1948. Here it is possible to open more "new" land upon which tall capoéira has developed. Since this município is remote--but more in terms of road transport than in actual distance--there is greater need to produce a high-value, low-bulk crop, such as tobacco, and less possibility for the commercial production of manioc. Many fields of tobacco are allowed to revert directly into capoéira. Since the land is more thoroughly fallowed and since there are fewer cattle and thus less manure, fertilization is generally less extensive in this area. A similarly modified pattern of cultivation is found in Catu and in the more remote parts of São Gonçalo.

In Santo Antônio, where the intensity of agriculture is increasing, but where the cultivated area is still relatively small, much "new" land can be used. In this município the area in tobacco is [249] large in relation to manioc, and thus some tobacco fields obviously revert directly to brush.

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• 244 There seems to be no definite land rotation period in the tobacco-manioc region. Rather the period is controlled by the availability of land. In 1948, the município of Cruz das Almas, one of the most intensively cultivated areas of the tobacco-manioc region, had one half of its total surface in cultivation according to the official data. Approximately one-quarter of the total area was in each of the two crops. Under these circumstances, no more than two years of fallow can have intervened between the harvesting of manioc and the planting of tobacco. However, not all of the município can be cultivated, and certainly no more than three-fourths of the total area can be used for tobacco. It follows that in many cases no more than

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249 one year could have intervened between manioc and tobacco. By 1953, the
244 total cropland was obviously far below the 1948 level--probably no more than one-fourth of the land was under cultivation. Even so, the rotation period was extremely short, usually only one or two years. The cultivators are enclosed in a narrowing circle of exhausted soil, increasing cost of manure, and growing population. These are the fundamental problems of the tobacco and manioc region. All of these problems seem to be especially acute in the municipio of Cruz das Almas, but they are serious in every area where tobacco is grown.

243 The Cultivation of Corn and Beans. Corn and beans are usually
244 cultivated in the Recôncavo under a land rotation system, much like the system of tobacco and manioc. The qualification "in the Recôncavo," is necessary because the modifications of the corn-bean system as it overlaps the Recôncavo from the north and west are very significant. In the sertão the areas suited to crop cultivation are more limited, primarily because of the lesser amount of precipitation. Where suitable areas are available, such as at the foot of the low mountains, cultivation tends to be permanent, particularly if the soils are relatively good and if the population is relatively dense for so droughty a zone--as in Serrinha and Inhambupe. This permanent form of agriculture is called pé do monte (foot of the mountain) and is a relatively standardized agricultural system in the sertão, as well as in the crystalline zone near the western edge of the Recôncavo, in Feira de Santana and Santo Estêvão, where corn and beans are often cultivated around the low serras. In the Tertiary zone farther east, where there are no serras, a similar system of permanent cultivation is found in the valleys. Elsewhere within the Recôncavo, corn and beans are generally cultivated under the field and fallow system,

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243 244 [134] either separately or in conjunction with tobacco and manioc. They are frequently grown on land thought to be not suitable for tobacco cultivation yet too good for manioc alone, such as the steeper slopes of the crystalline area where the heavier soils do not produce good quality tobacco.

Since the area in corn and beans is small and the amount of slope land large, the capoeira is extensive and frequently quite tall. After the slopes are cleared, the land is very often planted to mixed corn and beans, more rarely to one or the other. The crops are planted [221] in March or April, perhaps in May, and even in June for beans alone. The planting season for these crops is extended both because they are tolerant of changes in season and because as crops secondary to tobacco they have a lesser priority. Some corn is usually planted early enough [527] [862] so that it will ripen in time for São João (mid-summer day) festival for which fresh corn-on-the-cob is the traditional food. This festival is usually the beginning of the corn harvest, but the bean harvest [251] begins a month later. Both crops are harvested by hand and, after drying, are shelled by hand, sacked, and either stored or sold. When the fertility of the soil is higher than normal or when there is labor to spare, the field may be planted to manioc after the corn and bean harvest.

243 244 249 311 As a result of the interpenetration of the corn-bean and the tobacco-manioc systems, in many regions and on many individual properties the two co-exist. Usually the upland fields are in tobacco and manioc, with an occasional plot of corn and/or beans. Usually the slope-land plots are in corn or beans.

249 The Cultivation of Sugar Cane. In distinction to the crops discursed above, sugar cane is grown under a system of permanent

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000 Footnotes - Chapter VI

[124] [129] [114]

[1]The discussion of the cultivation of tobacco and manioc is based upon the following sources: (1) private conversations with Mr. G. G. Jay, a tobacco buyer and grower of long experience in Bahia and in other regions of South America; (2) Walter Alberto Egler, "Aspectos Gerais da Cultura do Fumo na Região do Recôncavo na Bahia," Boletim Geográfico, Vol. X, No. 111 (November-December, 1952), pp. 679-688; (3) general field observations throughout the zone, except in Coração de Maria and Catu, and, during 1953-1954, detailed observations in São Gonçalo and in Cruz das Almas.

[804]

[2]Tarefa means "a task," "a day's work," or "a piece of work," but it is also an antique unit of area which is the folk-unit of area throughout much of Brazil. Its size varies from place to place, but the tarefa baiana equals 0.4356 hectares. In many areas one tarefa is considered to be the usual size of the tobacco planting of one man, but it is obvious from a comparison of the labor force and area in tobacco that in many areas the plantings per person must run much larger. In any case, the individual plots are very likely to be one tarefa each.

[3]In many areas the tree stumps have entirely disappeared as a result of the intensive cultivation, which severely restricts the size of the wild vegetation which can develop during the fallow period.

[114] [243]

[4]This interpretation differs, at least in emphasis, from that of Walter Alberto Egler, op. cit., pp. 679-688. He suggests as the characteristic sequence, tobacco, corn and/or beans, and then manioc. Undoubtedly this sequence is important, but the field investigation for the present study revealed that the direct replacement of tobacco with manioc is more characteristic.

[239]

[5]However, tobacco does not produce well on these poor soils unless manure is used, and even the yields of manioc are low unless it is planted in a field where there has been a relatively recent application of manure.

[244]

[6]The seed for corn, which is edible, has value in itself. The stalk of manioc has no utility except to reproduce the crop. Thus when manioc is planted, the cultivator invests only his labor and the questionable value of the land.

[7]See section by George Wythe in Simon Kuznets, Wilbert E. Moore, and Joseph J. Spengler (eds.), Economic Growth: Brazil, India, Japan, p. 34.

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249 The tobacco-manioc region, especially in the Southwestern
244 Recôncavo, was a zone of very small properties--in Cruz das Almas and
311 Coração de Maria the mean size of crop cultivation units was 9 hectares,
423 while in São Filipe it was only 5 hectares. This zone of small crop cultivation units is part of a belt, parallel to but well back from the coast, which originates in the serras of the coffee zone, crosses the Recôncavo along the caatinga-mata transition, and follows the caatinga-agreste boundary northward along the eastern edge of the Tertiary taboleiros. The small-property belt thus lies between the littoral, with its large plantations of sugar cane and its ranches, and the dry sertão, with its extensive livestock economy.

241 The Central Recôncavo was a zone of large crop cultivation proper-
249 ties, primarily sugar cane plantations. Although there are a large
311 number of livestock in the sugar cane region, the plantations use,
423 rather than produce, animals and were thus classified as crop cultivation units. The plantations of the sugar cane area are very diverse as regards size, and many of the individual properties are now operated collectively by large usinas. Nevertheless, there are still a number of small properties, producing cane which is sold to the large mills.

241 Mixed Crop Cultivation-Livestock Producing Units. A little over
231 one-half of all the farms in the Recôncavo produced livestock as well
233 as crops. These units occupied almost 60 per cent of the total area
311 of all properties. However, the area in which over half the properties were mixed units was limited to a broad perimeter zone which included all the outer municípios of the Eastern, Northwestern, and Southwestern Recôncavo (Map 98). In Itaparica and Santo Amaro, where crop cultivation units were very important, there were relatively few mixed units.

244 The maps of the area in mixed units in relation to enumerated
249 area (Map 99) and total area (Map 100) confirm the observation that
231 [TEXT CONTINUED ON PAGE 311]
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the tobacco-manioc region is an area of co-existing crop and livestock production. The mean size of mixed units of both the tobacco-manioc region and the western and northern perimeter of the Recôncavo was small—20 to 40 hectares—but was significantly larger than the mean size of crop farms in the same areas (Map 101). Like the purely cane-producing plantations, the mixed units of the Central Recôncavo were relatively large.

Crop Cultivation and Mixed Crop Cultivation and Livestock Producing Units Combined. The distribution of the area in crop and crop-livestock units combined, as shown on Maps 102 and 103, reaffirms the regional distinctiveness of the Recôncavo. In almost the entire region over one-half the total area was in these two types of crop-producing properties. None of the adjoining municípios had as much as 50 per cent of their total area in these two types of units, and in all but three, less than one-third the land was in crop or crop-livestock properties.

Regional Pattern of Agricultural Properties. The distribution of the three major production units is summarized on Map 104. In each of the two basic regions—crop and crop-livestock—one production type dominated, in number and in area, over the others. The Central Recôncavo with the island of Itaparica and, beyond the Recôncavo, the environs of Nazaré composed a region in which most of the agricultural land was in crop cultivation units. North of the Bay, most of these crop cultivation units were sugar cane plantations. On Itaparica there were several kinds of crop cultivation units—coconut plantations, diminutive manioc farms, and across from Salvador, small summer estates with a few cultivated fields. Around Nazaré most of the crop cultivation properties appeared to specialize in the production of manioc.

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241 and 161 hectares in Santo Amaro--while those of the Salvador area were
423 relatively modest--81 hectares in Salvador and 72 hectares in Itaparica.
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241 Rented Properties. There were few rented properties in the
427 Recôncavo as a whole in 1940 (Map 117), but in three areas over 10 per cent of the properties were rented: in the core of the tobacco-manioc area of the Southwestern Recôncavo; in Irará; and around Salvador. In Maragogipe, 52 per cent of the properties, occupying 15 per cent of the enumerated area, were rented (Map 118). In Santo Antônio, adjoining the Southwestern Recôncavo, over 30 per cent of the properties were rented, but along the western and norther border zones of the Recôncavo there were very few rented properties. Because of the small size of the units, rented properties in the Recôncavo generally occupied less than 10 per cent of the enumerated area.

[241] The rented properties of the tobacco-manioc crop region were
[249] usually small, from 10 to 30 hectares, but in the sugar cane area they averaged over 200 hectares (Map 119). If the official data are correct, the mean size of rented properties in Coração de Maria was over 267 hectares, but this seems very unlikely and has not been shown on the map.

241 Corporate Lands. In 1940, one-hundred ninety-eight of the 29,000
423 agricultural properties of the Recôncavo were owned by corporations or
471 companies. The total area of these properties was 33,000 hectares, almost 4 per cent of the total enumerated area of the region. Moreover, the land which composed these properties was some of the most productive in the Recôncavo. The number of corporate properties and the concentration of land under corporate ownership almost certainly has increased since 1940.

[TEXT CONTINUED ON PAGE 337]

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[456] operation is determined by the company officers, who generally live in Salvador. The company, in its turn, is subject to some control from Rio de Janeiro and São Paulo investors. This structured system of control probably is one of the reasons for the continuation of the monoculture in the sugar cane area. The usual explanation offered for the cane monoculture is the unique suitability of the soil and climate and the innate conservatism of the Baiano. However, one of the features of the present sugar economy is the lack of capital for other enterprises. The absentee owners, who are the only likely source of capital, are hesitant to advance money for new and untried enterprises. Moreover, alternative agricultural enterprises, if successful, would reduce the supply of cane and thus eventually raise the cost of usina operation.

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442 In the tobacco-manioc region the control exercised by Salvador is indirect, but compelling, because the small tobacco producer is almost completely at the mercy of the buyer, who receives orders from the tobacco exporter and manufacturer through the agent.

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[184]
[231]
[233] The differences in production specialization, size, and tenure among the agricultural properties of the Recôncavo both accentuate the basic dichotomy of the region and re-emphasize its unity. The small-scale mixed crop cultivation and livestock producing unit of the tobacco-manioc region and the large-scale crop cultivation unit of the sugar region are both esentially engaged in the production of commercial crops. Both are distinct from the primary agricultural unit of the sertão, the livestock ranch. Both are subject to the over-all economic control of the center—Salvador.

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[249] In most parts of Brazil, as in the Recôncavo, the agricultural properties are highly diverse in size, function, and ownership. Most areas of sugar cane cultivation have relatively large properties, primarily engaged in crop cultivation. In other areas, as in

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11
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BB 245 433 439

come to be the area of the greatest value of agricultural production in the state--Cr.$1,007,824,000, in 1948, almost three times the value of

B BB 231 233 433

crop and livestock production in the Recôncavo, Cr.$335,000,000. The total value of livestock production in the Recôncavo is estimated to be about Cr.$60,000,000 for 1948. Although no comparable figure is available for Brazil, probably the Recôncavo had less then 1 per cent of the livestock and thus produced less than 1 per cent of the value of livestock in the nation as a whole.[1]

B BB 433

The present inferior position of the Recôncavo is in part a reflection of the relative decline of the region in the nineteenth century discussed in the chapter on the evolution of the Recôncavo. However, the Recôncavo continues to lag behind in the contemporary development

B BB 241 249 433 [458] [654]

of Brazil. From 1944 to 1952 the total cruzeiro value of the principal crops of Brazil increased four-fold, while the value of Bahia's tobacco crop, a good indicator of the economic shifts of the Recôncavo, increased by only one-fifth despite the concurrent inflationary spiral. Even the government-stabilized sugar industry of the Recôncavo produced only three and one-half times its 1944 value. Although the above increases are more indicative of the steadily declining value of Brazilian currency than of true economic development, they are an index of the relative importance of agriculture in the Recôncavo to the national economy.

BB 249 244 433 311

Tobacco, sugar cane, and manioc, which occupied 70 per cent of the Recôncavo's cropland, accounted for 77 per cent of the total value of all principal crops in 1948 (Table XVI). Each of the three crops contributed at least 20 per cent of the value of all crops, while no other crop produced over 6 per cent of the total. The cruzeiro value of these principal crops, and of livestock, and their relative position within the nation has been given in Table XV, above.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 433 245 439 neglect the critical tobacco producing areas. It seems to be true that the chief recipients of political and economic attention have been the traditionally important sugar cane area, and more recently the cacao zone. The people of the tobacco area complain particularly about the lack of roads. 491

244 433 Not only is manioc the basic source of subsistence for the Recôncavo, it is also the second crop in value of production. Its cultivation, as has been seen, is closely associated with the production of tobacco, so that the Southwestern Recôncavo, which produced 63 per cent of the tobacco crop, also contributed a very large part--48 per cent--of the total value of manioc (Map 121). However, manioc is important in its own right, as well as in its relationship to tobacco. No data are available to indicate the importance of manioc as a surplus product which is sold beyond the borders of the município in which it is grown. A rough estimate can be made by assuming that the per capita consumption of manioc is 400 kilograms per year--this is the mean consumption for the state of Bahia. Using this figure in conjunction with the population data, it is possible to estimate that in 1948 about 30,000 tons of surplus manioc was produced in the Recôncavo. Ninety per cent of this surplus was produced in the municípios of the Southwestern Recôncavo. 489 494 It is significant that many of the trucks passing from the Southwestern Recôncavo to Feira de Santana and Salvador are piled high with bags of farinha de mandioca. The total value of commercial manioc would be about Cr.$6,500,000, so that on this basis manioc is the fourth or fifth most valuable commercial crop of the Recôncavo. Using the above method of determination, it was found that several municípios adjoining the region also produced surpluses of manioc. The most notable of these were the four municípios adjacent to the Southwestern Recôncavo--Nazaré, São Miguel, Santo Antônio, and Castro Alves--which produced a

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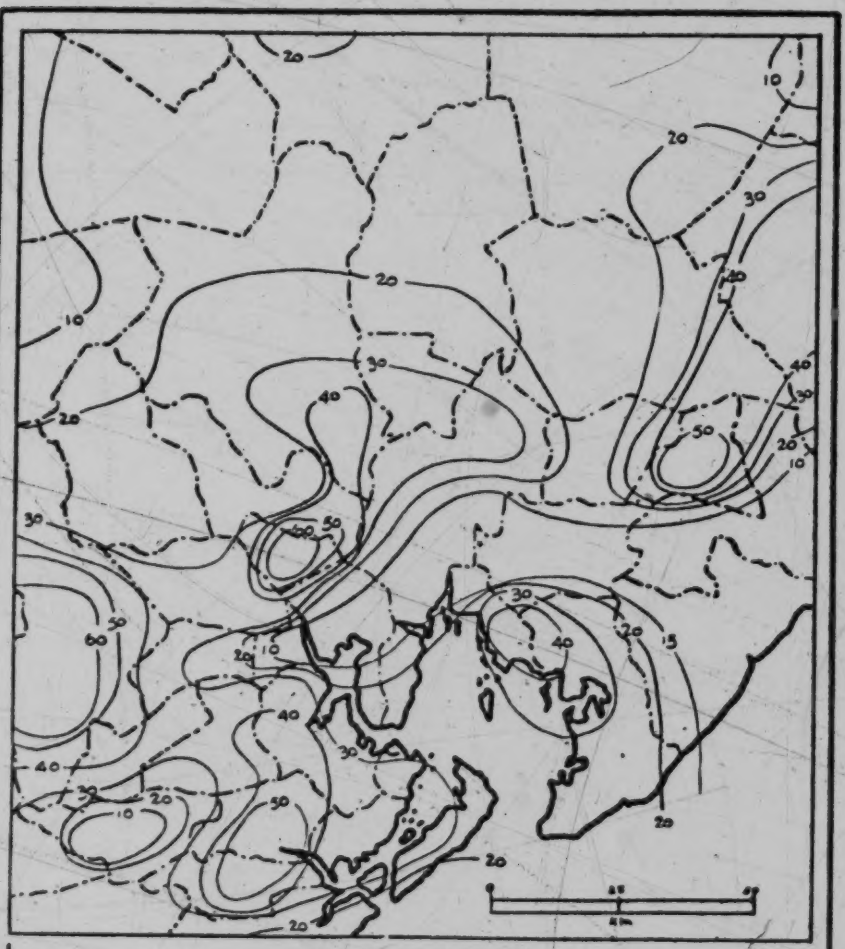

RECONCAVO OF BAHIA

Per cent of the Total Value of Crop Production

Contributed by Manioc--1948

MAP 121

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 433 [438] 10,000-ton surplus. The surplus manioc of these municípios would appear to be marketed to the manioc-deficit areas of the Recôncavo, particularly the sugar cane area and Salvador. It is significant that those municípios [249] which were the leading producers of tobacco were also the leading producers of commercial manioc (Map 123). Although the exchange and processing of tobacco in these areas is well organized and receives some attention from government bureaus, the growing and processing of manioc remains an unrecognized enterprise.

249 244 433 The importance of the production of tobacco and of commercial manioc to the various municípios of the Southwestern Recôncavo is shown in the following summary:

Município	Per cent of Total Value of Production	
	Tobacco	Manioc
Cruz das Almas	65	23
Conceição de Almeida	57	38
São Filipe	25	32
Muritiba	17	14
São Félix	54	-

One of the advantages of the relative balance of these two products is that in the event of a crop failure of one, the area would still have a salable commercial product. Moreover, since the production of manioc is relatively large, a moderate decrease in its yield would still leave this area with at least a minimum supply of food for its large agricultural population.

249 257 433 [654] Sugar cane is now the third crop in value in the Recôncavo, but it is maintained in that position only by government subsidy. It is a crop which either dominates the region in which it is produced or its cultivation is economically unimportant (Map 124). In part this is the result of the technological requirements of the sugar industry, which demand that large quantities of sugar cane be produced close to the mill so that the cane can be delivered quickly once it is cut. However,

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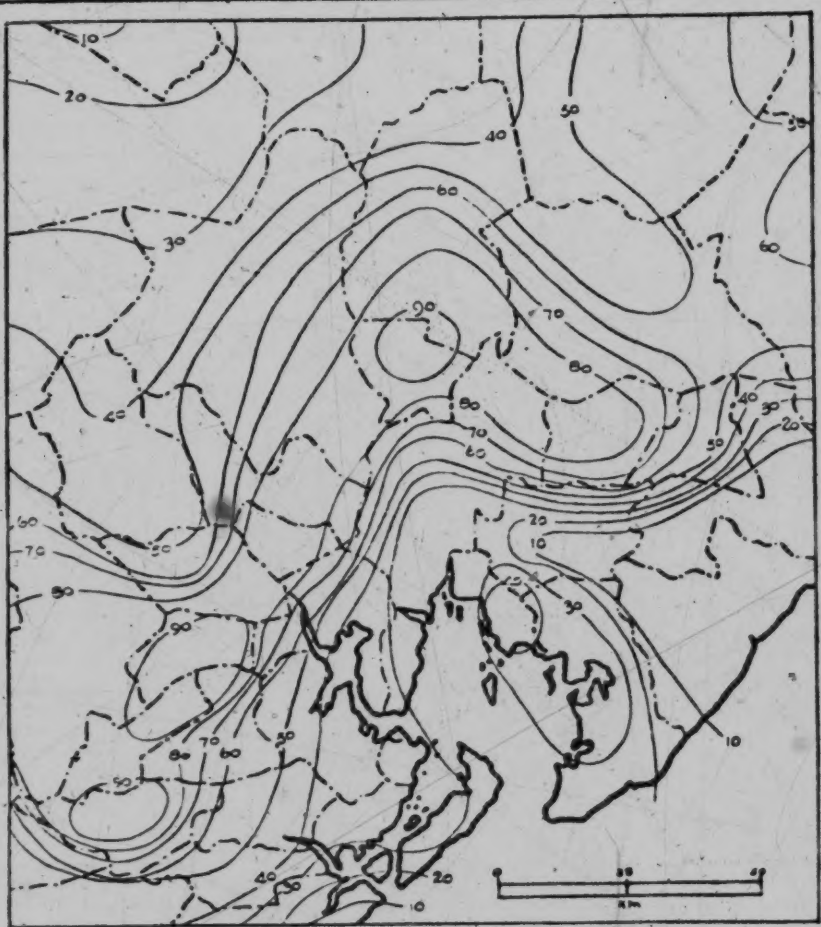

RECÔNCAVO OF BAHIA

Per cent of the Total Value of Crop Production

Contributed by Tobacco and Manioc—1948

MAP 122

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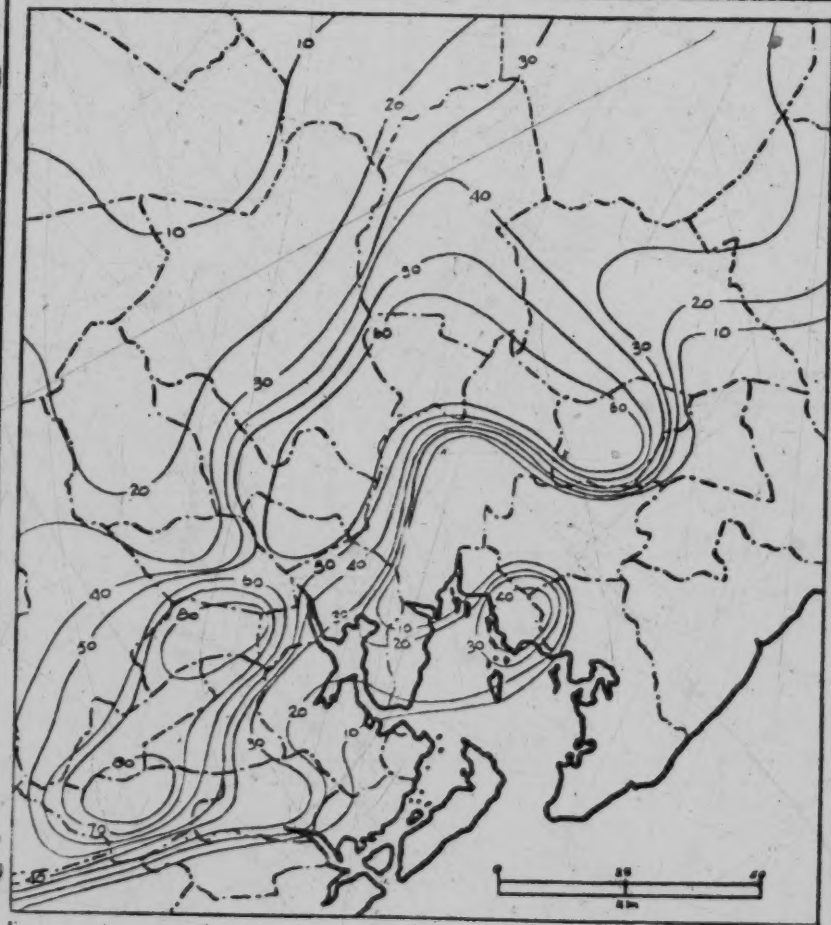
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249
257 the large landholders and agricultural capitalists of Brazil have a
433 strong historical bias toward monocultural systems.

249 As would be expected, the Central Recôncavo accounted for almost
433 90 per cent of the total value of sugar cane in the region. Sugar pro-
471 duction in this area is dominated by the big usinas, and most of the cane is produced on very large properties, as has been seen.

243 Although corn and beans primarily are subsistence crops, they
244 have, like manioc, some commercial importance (Map 125). The corn and bean
433 areas within the Recôncavo do not produce outstanding surpluses, although
438 these two crops are important commercial products in nearby Serrinha and Conceição do Coite. Most of the corn and beans of the Recôncavo are exchanged for farinha de mandioca, which provides the cultivator with a cheaper food.

244 The remaining crops of the region are of minor commercial impor-
245 tance, or are more valuable commercial crops of highly localized pro-
433 duction. Bananas, peanuts, and sweet potatoes are minor commercial
438 crops of diffuse production, since most of their cultivation is for subsistence purposes. Oranges, coconut, coffee, and pineapple are important but secondary commercial products whose production is concentrated in a few restricted areas (see, for example, Map 126 of coconut production).

249 The importance of the principal commercial crops--tobacco, sugar
344 cane, coffee, coconut, oranges, pineapple, a few minor crops, and
245 commercial manioc--varies widely from município to município (Map 127).
433 However, two areas--the Central Recôncavo and the Southwestern Recôncavo--
438 had highly commercial economies in which over 90 per cent of the total value of production was in commercial crops. In the tobacco-manioc area north of the Rio Paraguaçu, only one-half to three-quarters of
000 the total value of production was in commercial crops. Except in the

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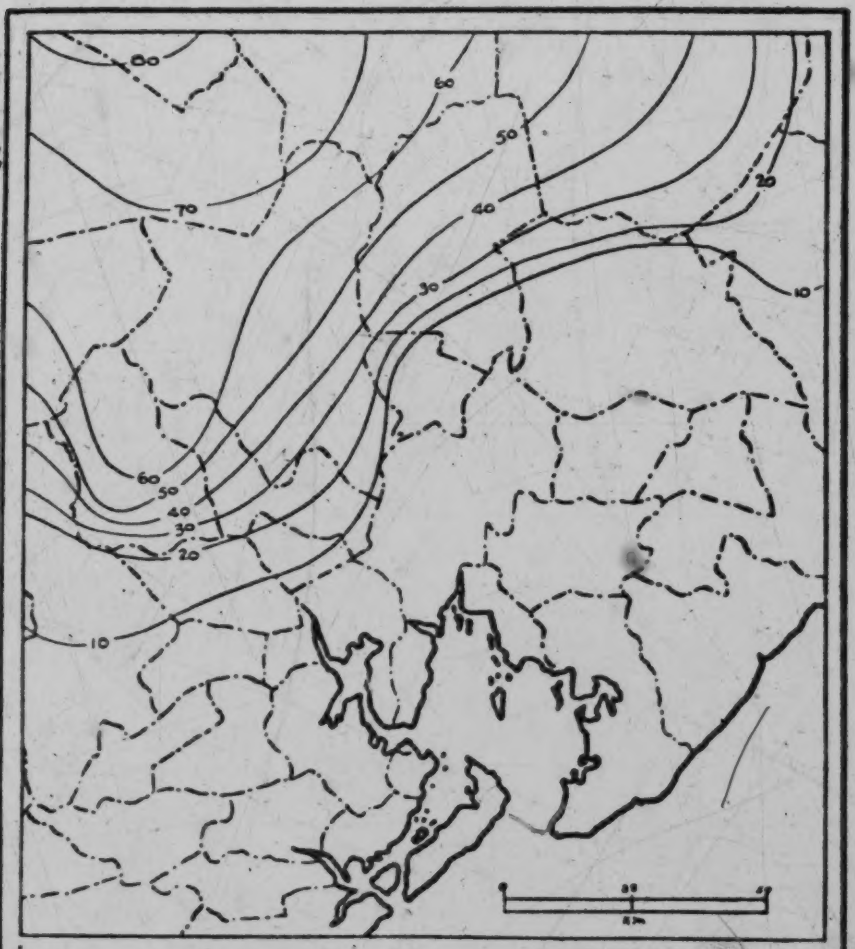

RECÔNCAVO OF BAHIA

Per cent of the Total Value of Crop Production

Contributed by Corn and Beans--1948

MAP 125

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

CHAPTER XI

CONCLUSION

128 In the preceding chapters the results of a statistical appraisal and a field investigation of agriculture in the Recôncavo have been presented. As a conclusion it seems appropriate to: (1) summarize the findings; and (2) discuss the potentialities of the Recôncavo for agricultural development

433 241 Like most of the densely-settled east coast of Brazil, the Recôncavo is engaged primarily in the production of crops. This is true not only of the region as a whole, but also of each of its individual parts excepting only the area around the cattle market town of Feira de 241 311 Santana. The total cultivated area of the region, about 6.4 per cent of the land surface, was almost evenly divided in 1948 between purely commercial crops--tobacco, sugar cane, coffee, oranges, and coconuts--and subsistence-commercial crops--manioc, corn, beans, bananas, peanuts, and sweet potatoes. About 70 per cent of the cropland was used for the three predominant crops--manioc, tobacco, and sugar cane. Livestock pro- 231 233 duction is associated with crop cultivation in many parts of the 241 Recôncavo, but the region is also dependent upon the sertão of Bahia for livestock, which are driven into Feira de Santana and are used in several different areas within the region.

249 244 433 The three principal crops as determined by cultivated area--tobacco, manioc, and sugar cane--accounted for 77 per cent of the total value of crops in 1948, and no other crop accounted for more than [231] [233] 6 per cent of the total value. Thus agriculture in the Recôncavo is primarily concerned with these three crops and with the production

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of livestock, which had a value greater than sugar cane but less than manioc.

Agricultural activities within the Recôncavo are localized in several distinct sub-regions, each with a specialized system of cultivation and each with either one or two principal crops. The primary agricultural subdivisions of the region are: (1) the sugar cane monocultural sub-region; and (2) the tobacco-manioc sub-region.

249 Sugar cane is grown as the exclusive crop in its major area of production--the pocket of coastal plain north of the Baía de Todos os Santos. Cane is generally cultivated under a four-year monoculture and one-year fallow system on large properties employing large quantities of hand labor and using oxen to draw plows and carts. Neither fertilizer 407 nor agricultural machinery is used to any appreciable extent. Most of 492 the animals used as labor in the production of sugar cane are brought 231 233 into the area from the sertão, and little livestock breeding is found in this area. The processing of sugar cane is in the hands of a small 471 number of medium-sized usinas. The companies which own these usinas 178 are gradually buying up the plantations so that to an increasing extent the mills directly control the production of sugar cane. Most of the 499 cane is brought to the usinas by railroad, although sailing boats are 489 505 used for this purpose along tidewater. Most of the sugar produced in 438 439 the Recôncavo is consumed within the state of Bahia, but small quantities are shipped to other parts of Brazil. Both the aristocratic upper class 565 and the rising non-aristocratic business interests of the Recôncavo are 471 472 involved in the ownership and administration of the sugar industry. The 464 permanent labor force is supplied from the settlements of the sugar cane 178 plantations and the mills, but the rural population and the labor force of the sugar area are declining. Seasonal labor for the harvest comes from the interior sertão of Bahia.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

249 311 [134] Commercial sugar cane cultivation is confined to the humid Coastal Plain areas with Cretaceous clay soils, except for a small area in São Filipe. Since the areas of Cretaceous clay soils are limited and compact, sugar cane production is highly localized in two areas: (1) the main sugar cane area in the municípios of Santo Amaro, São Francisco, and São Sebastião; and (2) a smaller area north of the Bacia do Iguape in the município of Cachoeira. There is a third area of less intensive production in southern São Filipe.

249 244 [433] The sole purpose of cultivation in the sugar cane area is the production of a commercial product, but the areas of tobacco-manioc cultivation produce both a staple food and a commodity for sale outside the region. Most of the tobacco and manioc of the Recôncavo are produced under a land rotation system in which the sequence is: (1) tobacco; (2) manioc; and (3) fallow in wild vegetation. The tobacco is planted in small fields, usually after an application of manure. The entire plant is harvested repeatedly until it will no longer produce a salable leaf. Manioc is planted following tobacco, sometimes several times, until the field is exhausted and abandoned to the second growth. The fallow period is frequently short, sometimes as little as one year. Cultivation is entirely by hand--no plows are used. There is very little selection of seed, and only one variety of tobacco--Bahia Brasil--is [423] [427] produced. Tobacco and manioc are produced almost exclusively by small cultivators who are either owners or renters. Frequently livestock [231] [233] are raised upon the properties of the cultivators, but except for the use of manure in the cultivation of tobacco, there is little integration of crop and livestock production. The leaf is harvested, dried, 276 and partially fermented by the cultivator. The marketing of tobacco 276 438 [452] [488] is inseparable from the credit arrangement between the cultivator and the tobacco buyer or agent. The leaf is delivered by the producer to the storekeeper-buyer or the local tobacco warehouse.

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

000 the storekeeper-buyer or the local tobacco warehouse. The roots of the
258 manioc are processed locally, in casas de farinha, and the farinha de
438 mandioca is sold in the local market or to storekeepers in the nearby village or town.

249 The sub-region of tobacco and manioc production occupies the
244 humid eastern and southern edges of the Uplands. The chief center of
311 production, the Southwestern Recôncavo, occupies a zone of deep, sandy
134 and sandy loam soils lying in flat-surfaced uplands above crystalline rocks. The northern parts of the tobacco-manioc sub-region occupy the rough, dissected southern edge of the sandy Tertiary taboleiros--in this northern area the production of both crops is less intensive than in the Southwestern Recôncavo. The area of primary tobacco and manioc production generally conforms to the forest and scrub forest transition and is expanding southwestward beyond the traditional Recôncavo along this
[433] physical boundary zone. The intensity of production is also increasing,
[178] but with violent year to year fluctuations.

241 In addition to sugar cane, tobacco and manioc, other subsistence
433 and commercial products are grown in the Recôncavo. The most important of these are corn and beans, grown as commercial and subsistence crops in the north and west of the region, and coconuts, which are produced along the beach line. Bananas, sweet potatoes, and peanuts are grown in most parts of the Recôncavo, but on a small scale.

241 There are several areas in which there is little or no cultiva-
311 tion. The rougher Intermediate Hills, which are forested, separate the
137 sugar cane sub-region from the tobacco-manioc sub-region. The lowland areas of Tertiary and crystalline soils are also forested and are cultivated under a non-intensive land rotation system with some associated
241 livestock. The Recôncavo is distinguished from the surrounding areas by its relatively greater mean intensity of cultivation. In the

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

241 of value and production, at least of marketed crops. The choice between
433 value or production as a base figure for correction was dependent upon
127 the individual case and the generally expected pattern of price and
128 yield.

• 244 Manioc. The basic shortcomings of the manioc data were clearly
433 revealed when area and production figures were combined to show yield.
127
128 While the mean calculated yield for the Recôncavo was 16.3 tons per hectare, the mean calculated yield for individual municípios varied from 5.3 tons per hectare for Salvador to 39.0 tons per hectare for São Filipe (Map 130). Certain variations, related to precipitation, soil, and intensity and care of cultivation, are to be expected, but the yield maps revealed incredible contrasts. Especially noteworthy was the case of São Filipe, with its yield of 39 tons per hectare. Adjoining Cruz das Almas and Conceição do Almeida, with similar and if anything more efficient practices of cultivation and with similar soils and climate--especially since most manioc in São Filipe is grown in the area adjoining Cruz das Almas and Conceição do Almeida--produced only 14 and 10 tons per hectare, respectively. It was apparent that at least one element in the São Filipe data was in error. The other municípios with exceptionally high yields--São Francisco, with 34.5 tons per hectare, and Santo Amaro, with 25.3 tons per hectare--probably can be explained by high productivity when manioc is grown on a small and intensive scale on the more fertile clay soils.

In São Filipe the yield calculated from official data was three
[435] to four times that of the surrounding municípios. Moreover, the unit value per ton was Cr.$60, compared with Cr.$150 to Cr.$200 for adjacent areas. The conclusion that the production figure was an error was re-enforced through a comparison of the density of production in

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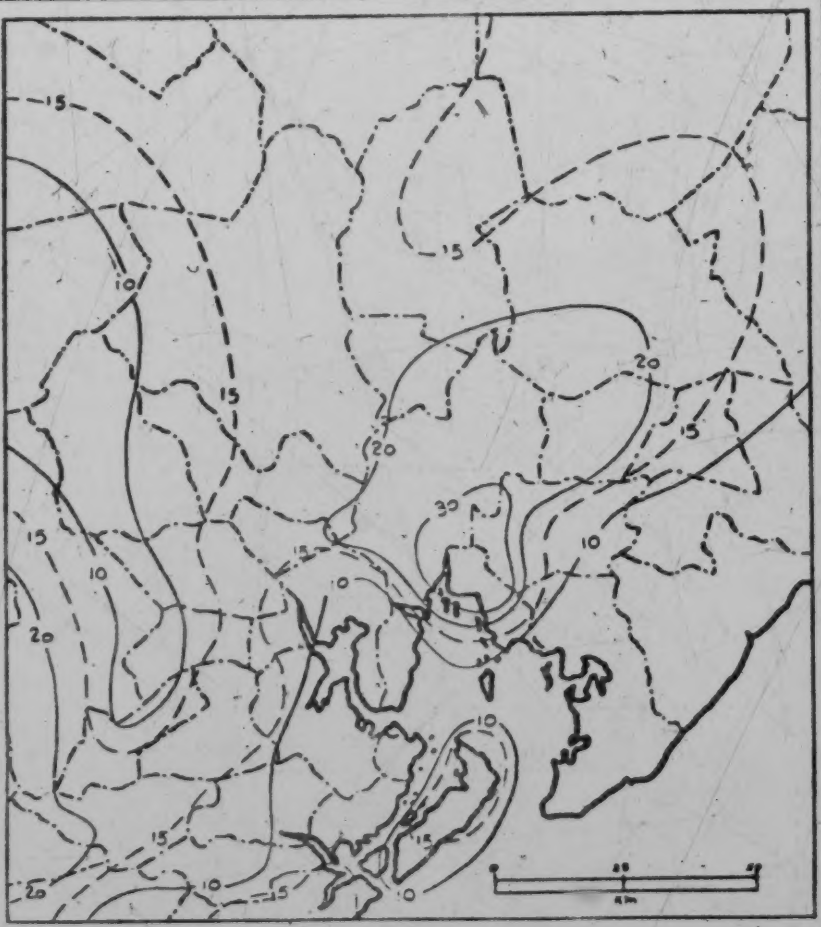

RECÔNCAVO OF BAHIA

Yield of Manioc--1948

(Based upon un-corrected official data)

Source of data: Produção Agrícola: 1948.

MAP 130

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 São Filipe, 230 tons per square kilometer, with the 162 tons per square
433 kilometer of Conceição do Almeida, a more notable producer.
127
128 It was assumed that the unit value in São Filipe was the mean of the prices of Maragogipe and Conceição do Almeida—São Filipe is midway between these municípios in terms of location, transport, and external market relationship—and that:

$$\text{Production} = \frac{\text{Value}}{\text{Unit Value}} = \frac{4,290,000}{\frac{170 + 190}{2}} = 27,333 \text{ tons}$$

This figure is close to 28,000 tons, and it was inferred that the original figure had been transposed to 82,000 tons. Yield was then derived:

$$\frac{28,000 \text{ tons}}{2,100 \text{ hectares}} = 13.3 \text{ tons per hectare}$$

compared with 13.9 tons per hectare for Cruz das Almas and 11.1 tons per hectare for São Félix, nearby areas with similar conditions. Perhaps this yield is slightly high, but it is in the possible range of variation, and is an acceptable approximation.

435 There was a second problem in Irará. The unit value of manioc here was Cr.$90 per ton, compared to Cr.$300 in nearby Coração de Maria, Cr.$240 in Feira de Santana, and Cr.$320 in Santo Amaro. Moreover, the density of production was very high, 26.45 tons per square kilometer total area, compared to 10.72 tons per square kilometer for Coração de Maria, especially since so much of northern Irará is not densely settled. When Cr.$200 per ton was postulated as the unit value of manioc, the production derived was 10,500 tons. Yield calculated by using this figure and the original area data would be 4.38 tons per hectare, which is unreasonably small. The yield calculated from the original data—14.6 tons per hectare—seemed approximately correct, and using these yield figures, with the derived production value of 10,500 tons, area was calculated as 719 hectares. The new area figure

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

244 gave 0.54 tons per square kilometer total area, which corresponded to
433
127 0.59 tons per square kilometer for Coração de Maria.
128
[435] In São Sebastião, the low unit value of manioc--Cr.$80 per ton--indicated possible error. The reasonable intensity of production suggested that the total value data were in error. The mean unit value of the four surrounding municípios--Cr.$240 per ton--was accepted for São Sebastião and was used to calculate a revised total value of Cr.$168,000.

Minor errors were apparent in the data for certain other municípios. For example, the yields of Maragogipe, Cachoeira, and Salvador were extremely low. Adjustments could have been made, but the relatively small manioc area and production in these municípios indicated that the resulting alterations would not markedly change the general area or production pattern. Maps 130, 131, 132, 133, and 134 show the patterns of manioc cultivation, production, and yield as taken from unmodified official data in Produção Agrícola: 1948. The corresponding maps based upon modified data (Maps 22, 23, 24, 25, and 27) are presented in Chapter V.

243
433 Corn. Calculations from the original data gave Maragogipe a
127 yield of .40 tons of corn per hectare, less than one-half the yield
128 of neighboring municípios. This was excessively low, and it seemed preferable to use the figure of 1.24 tons per hectare, the mean of adjacent São Filipe and Cachoeira. These municípios, though not similar to the whole of Maragogipe, resemble very much the adjoining areas where cultivation is concentrated. The production figure for Maragogipe was accepted as reasonable, since when combined with value it produced a credible unit value. Thus the area was reduced from 15 hectares to 5 hectares, raising the yield to a more acceptable level. However, these changes do not modify the gross pattern extensively, and therefore the maps in Chapter 7 were based upon the original data.

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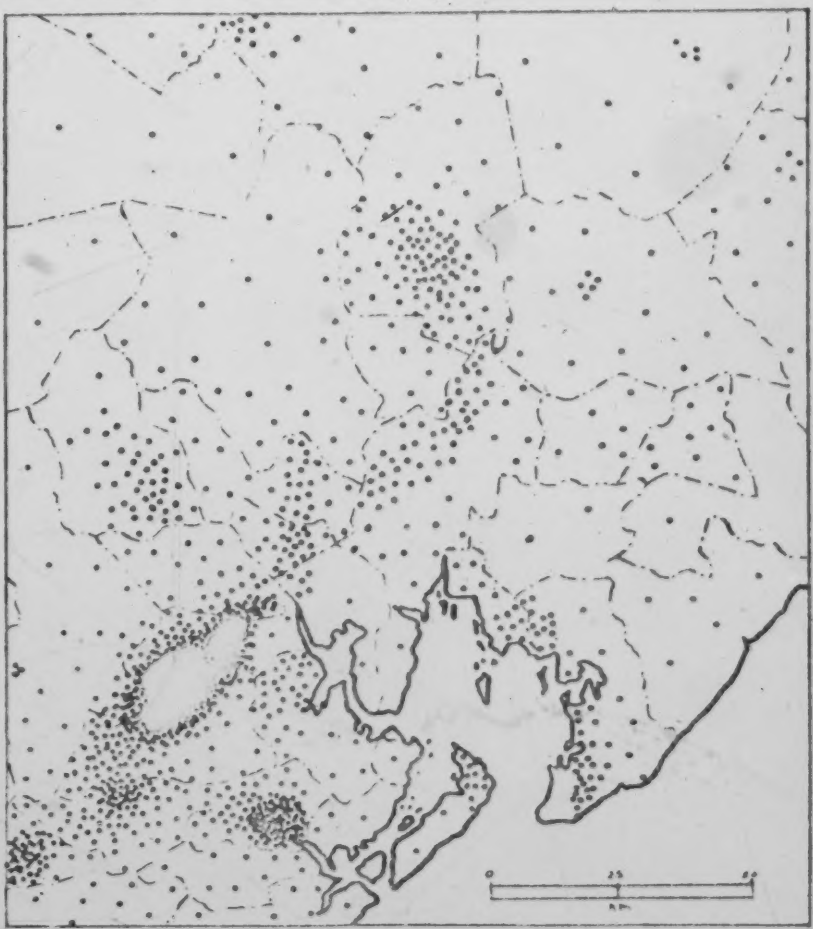

Each dot = 25 hectares

RECÔNCAVO OF BAHIA

Area in Manioc--1948

(Based upon 10%-corrected official data)

Source of data: Produção Agrícola: 1948.

MAP 131

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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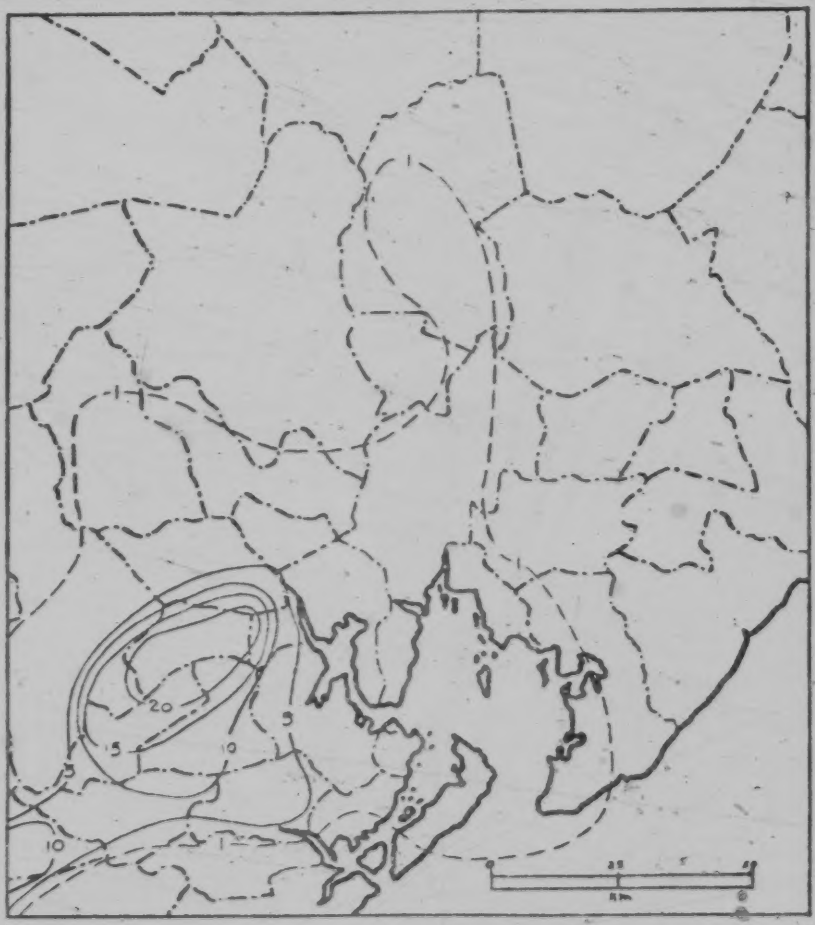

RECÔNCAVO OF BAHIA

Hectares of Manioc per Square Kilometer of Total Area—1948

(Based upon un-corrected official data)

Source of data: Produção Agrícola: 1948.

MAP 132

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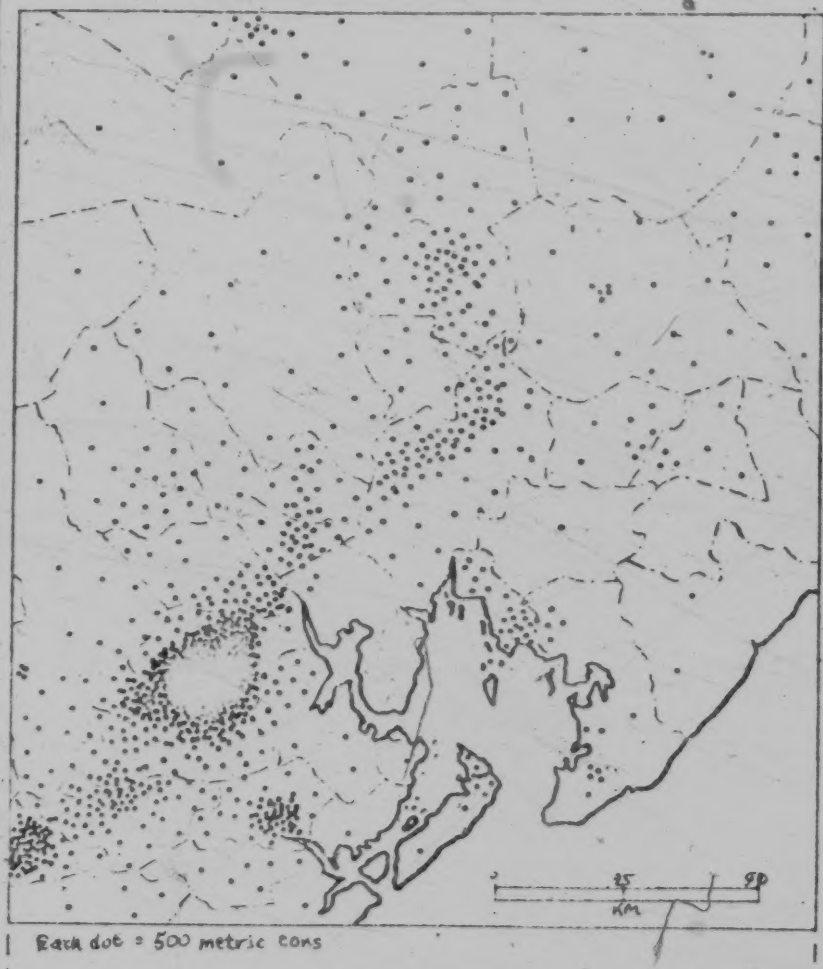

Each dot = 500 metric tons

RECÔNCAVO OF BAHIA

Production of Manioc--1948

(Based upon un-corrected official data)

Source of data: Produção Agrícola: 1948.

MAP 133

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

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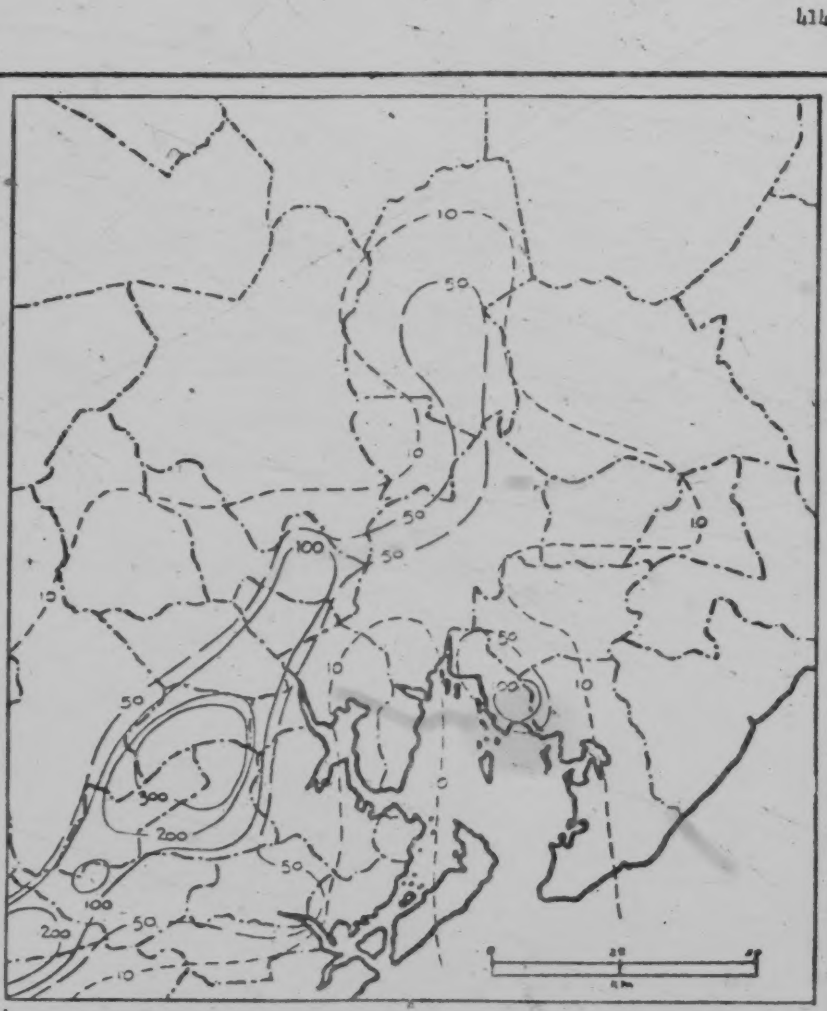

RECONCAVO OF BAHIA

Tons of Manioc per Square Kilometer of Total Area—1948

(Based upon un-corrected official data)

Source of data: Produção Agrícola 1948.

MAP 134

1:Haskins K-4,5 (1952-1954)1956 SO11 Bahia Brazilians SO11

243
127 Area data for corn should be used with reservation, especially
243 for the northern and western municípios. In the drier areas it is the
244 custom to plant corn and beans together in the same field, generally
127 in the same row, and the area could have been counted, in its entirety, twice (once for each crop). Yield calculations for corn and beans suggest that this has not been done; however, the vagaries of climate and cultivation in these dry zones produce such variations in mean yield from year to year and place to place that it was impossible to secure a clearcut verification. Conversations with personnel of the compiling agency failed to clarify the situation.

245
433 Bananas. The maps of banana area, based upon the official data,
129 reveal a definite gap in Cruz das Almas and northern São Filipe (Map 135). However, this area lies in the middle of a belt of relatively dense production. Field experience in this immediate area indicated that bananas were at least as important in these two areas as in adjacent Conceição do Almeida. The official data show only 7 hectares and 3,000 bunches of bananas in Santo Antônio, but the large numbers of banana plants which were observed would tend to discredit these figures. Since in the Recôncavo the area planted in bananas does not usually have a consistent relationship to the number of plants and thus to production, yields are not a trustworthy guide to the estimation of
245 production. On the map of banana production in the text (Map 52) the
433 official data have been modified to allow Cruz das Almas 190,000
127 bunches in place of the 29,000 in the official data; São Filipe,
128 70,000 in place of the official 20,000; and Santo Antônio, 90,000 in place of the official 3,000. These changes were made by arbitrarily increasing the production data to give these areas the same density of production as similar areas in adjacent municípios. Since, as has

[TEXT CONTINUED ON PAGE 417]

VILA RECÔNCAVO

[The Private Plantation]

Maria das Dores, whose name is listed as "gathering cane leaves for animal fodder," does the only type of work on the plantation done by women other than housework and gardening. When a field of cane is cut, the tops of the stalks and the long leaves are cut off and left on the ground. The very tip of the stalk is used as seed, while the heavier part is loaded on carts and sent to the factory. When natural pasturage gives out because of overgrazing or drought, the cattle's diet is supplemented with the freshly cut, green cane leaves; if the tender tips are not required for seed, they are also fed to the cattle. Gathering the leaves and stalk tips is relatively light work, and if a woman on the plantation wants to supplement her husband's income this is the task assigned her. Few women on this plantation do it, however, for it is a point of pride with any husband that he is capable of supporting his wife without her having to do gainful work. Only a small number of leaves are gathered up, and the remainder are burned as they lie in the field. Burning is done at night when there is little or no wind, and often during the summer fires which extend for acres dot the countryside. Burning is a traditional practice. Although professional agronomists insist that it is injurious to the cane roots and the new shoots, planters continue to burn the unwanted leaves, feeling that the ash provides some fertilization.

"Gardening" refers to work done in the vegetable garden which supplies Dona Sinhá's house. This garden stands in contrast to the roças, which are planted by the workers as well as by Dona Sinhá, and which are reserved for beans, manioc, corn, and some tobacco. Such plants as lettuce, tomatoes, cabbage, carrots, and other vegetables are disdained by the workers and are grown only for Dona Sinhá.

"Carrying water" is usually work reserved for a small boy. Mounted on a donkey with four wooden kegs he rides to the neighboring plantation, Pedras, which belongs to the factory, fills the kegs at the spring, and returns to Fazenda das Moças where he puts the water into the various large clay containers in the kitchen and washrooms of the owner's house. "Oh, Pedro, there's no water" is a common cry heard in Dona Sinhá's house.

There are few rules restricting the workers. Their services must be at the disposal of Dona Sinhá whenever required. Other than that, if during a slack season a man finds an opportunity to work somewhere else, he is free to do so. If he has a burro, or oxen, he has the right to pasture them on the